
Hood River City Council
211 Second St.
Hood River, OR 97031
(541) 386-1488
www.cityofhoodriver.gov

January 25, 2021

AGENDA

6:00 p.m.

Councilors:	Mark Zanmiller (President)	Kate McBride, Mayor	Megan Saunders	Tim Counihan
	Jessica Metta	Erick Haynie	Gladys Rivera	

All public meeting locations are accessible. Please let the City Recorder know if you will need any special accommodations to attend any meeting. Call (541) 387-5212 for more information. Oregon Relay Service 1-800-735-2900

The City of Hood River is taking steps to limit exposure and spread of COVID-19 (novel coronavirus). In support of state and federal guidelines for social distancing, the City of Hood River will hold this meeting by using Zoom Conferencing.

Please use the following phone number or video link:

<https://us02web.zoom.us/j/87475696829>

(253) 215 8782

Meeting ID: 874 7569 6829

Members of City Council and City staff will participate by Zoom, they will not be on site at City Hall during the meeting. The audio recording of the meeting will be posted shortly after the meeting on the City's website. Please check the City's website for the most current status of planned public meetings. <https://cityofhoodriver.gov/administration/meetings/>

I CALL TO ORDER

Land Acknowledgement Statement and Pledge of Allegiance

II BUSINESS FROM THE AUDIENCE

Hood River City Council encourages community members to talk about issues important to them. If you wish to speak during "Business from the Audience", there are two options to choose from:

1. Submit written comments to the City Recorder at j.gray@cityofhoodriver.gov by Monday, January 25, no later than 12 noon in order to distribute to the City Council in one packet for review by 3pm. All comments will be added to the record.
2. To address Council during Business for the Audience, email the request (name of speaker and topic) to j.gray@cityofhoodriver.gov by Monday, January 25, no later than 12 noon. Please specify the topic your testimony addresses. Testimony will go in order of requests received. Attendees that have registered will be unmuted by the IT Administrator for 3 minutes to address Council. Public comment will be by audio only. At the Mayors discretion, public comments may be received prior to a specific topic of relevance during the meeting.

III PRESENTATIONS

- 1. Community Health Needs Assessment, Jenny Anglin *(15 min.)* Pages 3-16
- 2. Mid-Columbia Center for Living, Al Barton *(15 min.)*

WORK SESSION

IV OPEN WORK SESSION

V AGENDA ADDITIONS OR CORRECTIONS

VI DISCUSSION ITEMS

- 1. Housing Code Amendment, D. Nilsen *(30 min.)* Pages 17-19

VII ADJOURN WORK SESSION

REGULAR COUNCIL MEETING

I OPEN REGULAR COUNCIL MEETING

II AGENDA ADDITIONS OR CORRECTIONS

III CONSENT AGENDA

These items are considered routine and/or have been discussed by Council in Work Session. They will be adopted by one motion unless a Councilor or person in the audience requests, before the vote on the motion, to have an item considered at its regular place on the agenda.

- 1. Award Professional Service Contract for Sanitary Sewer Infiltration & Inflow Study, W. Seaborn Pages 20-52

IV REGULAR BUSINESS ITEMS

V ORGANIZATIONAL UPDATES

- 1. Presentation by EcoNW, on the Hood River Housing Market, February 8, 5:00p.m.

VI MAYOR

- 1. Committee Appointments *(15 min.)* Pages 53-57

VII COUNCIL CALL

VIII ADJOURN REGULAR MEETING

Columbia Gorge Regional Community Health Assessment

2019 Overview and
Steps towards Community Health Improvement Plan

Full Community Health Assessment Document is available at: <https://www.cghealthcouncil.org>

Questions can be directed to Jenny Anglin jenny@gorgehealthcouncil.org

Columbia Gorge Regional Community Health Assessment 2019



A Collaborative Approach ...

- Yields a better; more accurate and actionable as community providers agree on the needs within our region and communities and will support our ability to address those needs together.
- Maximizes collective resources available for improving population health.
- Requires commitments of cash or in-kind resources from all participants who would use it to satisfy a regulatory requirement.
- The 'cohort' is the name for the collection of organizations shown on the left.

Community Health Assessment (CHA) Process Overall

3rd iteration

Seven Counties; Four hospitals; Two States

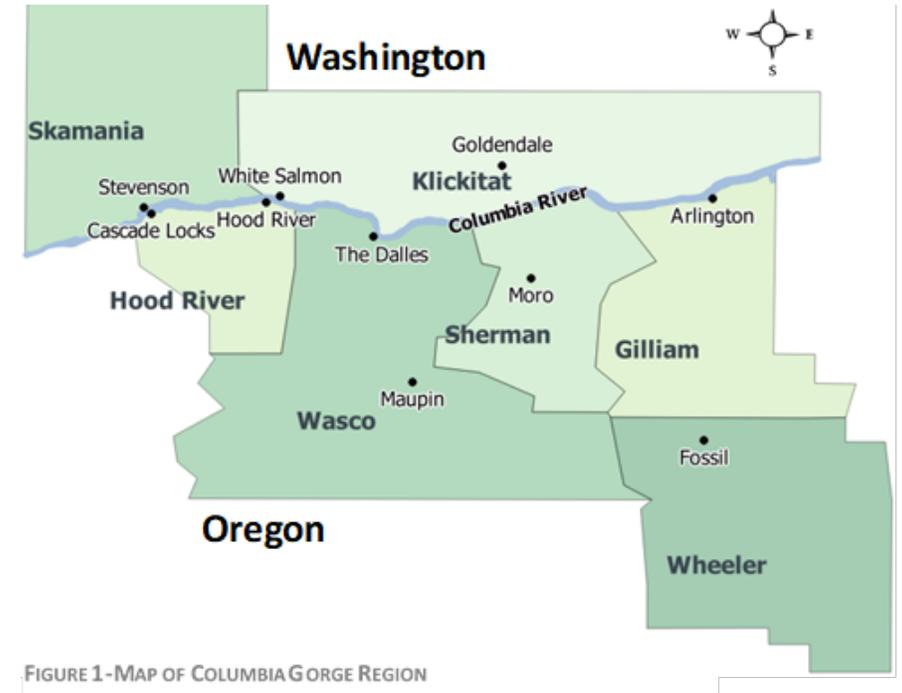
33 Data sources – one was the Consumer Survey

New cohort partners

- Southwest Accountable Communities of Health (SWACH)
- Advantage Dental
- Eastern Oregon CCO

Plain Language review of content

- Consumer Survey (English & Spanish)
- Infographics in the document
- Summary document (12 pages) in English and Spanish

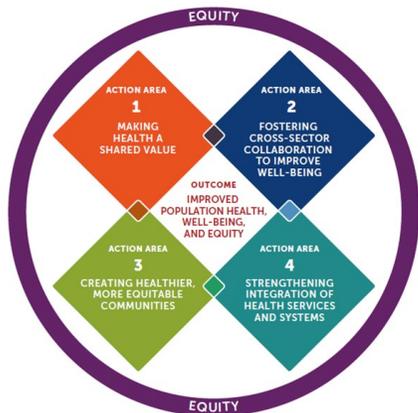


2017 CHIP topics covered in 2019 Community Health Assessment

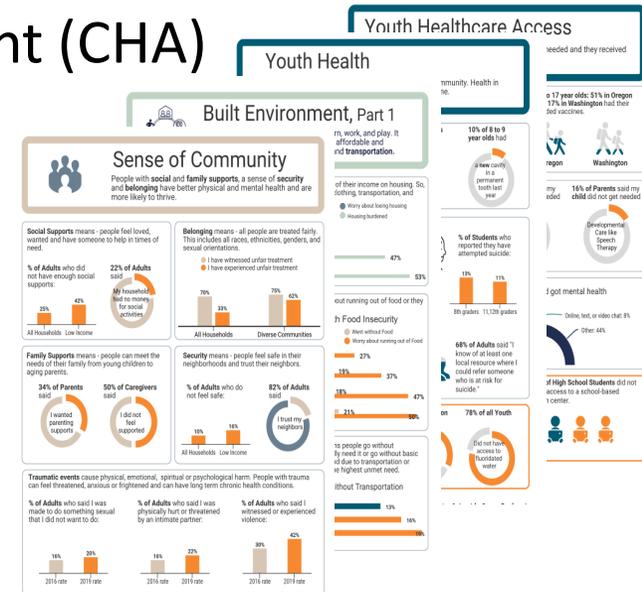
2017 Community Health Improvement Plan (CHIP)

Sense of Community

Built Environment
Access



2019 Community Health Assessment (CHA)



2019 Community Health Assessment organized by

- Sense of Community
- Built Environment
- Health/Healthcare Access for Youth and Adults

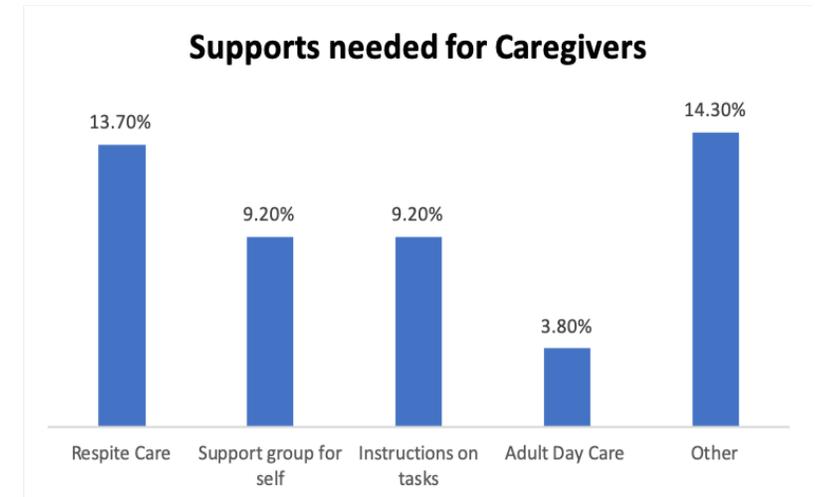
Gathered more information on systemic inequities

Sense of Community

- People with **social** and **family supports**, a sense of **security** and **belonging** have better physical and mental health and are more likely to thrive.
- Themes include:
 - Do people feel they have social supports?
 - Do people feel safe in their neighborhoods?
 - Do people feel they are getting the supports they need for their family?
 - Do people feel they belong and are treated fairly?
 - What traumatic events exist and are they affecting people still?
- Are there groups of people who experience disparity?
- Caregivers (definition): Adults providing caregiving services for another adult

2019 results on Sense of Community

- Overall, people feel social support challenges are worse than in 2016.
- 16% of Adults are Caregivers to an older adult and 50% of Caregivers have adequate support.
- Respite care is identified as highest need
- Rates of respondents experiencing violence increased from 2016:
 - 42% witnessed or experienced violence



Built Environment

- This means the places where we live, learn, work, and play. It includes **basic needs** like **housing** that is affordable and appropriate, healthy **foods** and mobility and **transportation**. This also includes all people having the chance to be **physically active** and **youth being safe**. To make the best of our built environment, we all need to feel safe in our neighborhoods, parks, and **schools**.
- Themes:
 - Housing, Food and Transportation
 - School-based meals
 - Bullying
 - Childcare access (impacts employment)

2019 results on Built Environment- Housing

- 25% of those surveyed worried about losing their housing and 7% went without housing- same as 2016
- The number who are housing burdened (paying more than 50% of their income on housing) is worse than 2016:
 - 27% of households
 - 30% of Communities of Color
 - 53% of Low-Income households
 - 53% of Uninsured
 - 47% of Medicaid/Dual Eligible
- Housing affordability continues to get worse and the supply of affordable housing is a severe constraint for the region.
- Increases in housing costs is squeezing out other basic needs and impacting more households.
- Common discussion has been whether the ~200 % FPL income requirement to qualify for food, utility, physical activity or other supports is too low

2019 results on Built Environment- Access to Healthy Foods

- 27% of all households worry about running out of food
- In our region, the people who experience higher levels of food insecurity include Low income households, Adults on Medicaid, Adults on Medicare and Communities of Color
- 10% went without food or meals sometime in the past 12 months
- 23% of Migrant/Seasonal farmworker households went without food or meals
- 27% worried about running out of food before having money to buy more
- 50% of adults on Medicaid worry about running out of food
- 6% are affected by distance or lack of transportation to get food
- People eat more veggies than fruit

2019 results on Built Environment-Transportation

- Transportation is the highest unmet basic need and it has increased since 2016
- People who experience barriers with accessing basic needs and services due to transportation include:
 - Families with young children
 - Low income households
 - Adults on Medicaid
 - Communities of Color
- 29% of caregivers went without social activities

Adult Health and Healthcare Access

- Health affects how well adults can learn and earn income. People with chronic conditions or other illnesses that are managed can thrive and be healthy. Healthcare Access means adults got the healthcare services they needed. The health of adults also has a direct impact on the health of their children and the children they care for.
- Themes:
 - Chronic conditions including Obesity or overweight
 - Disability
 - Healthcare access and services

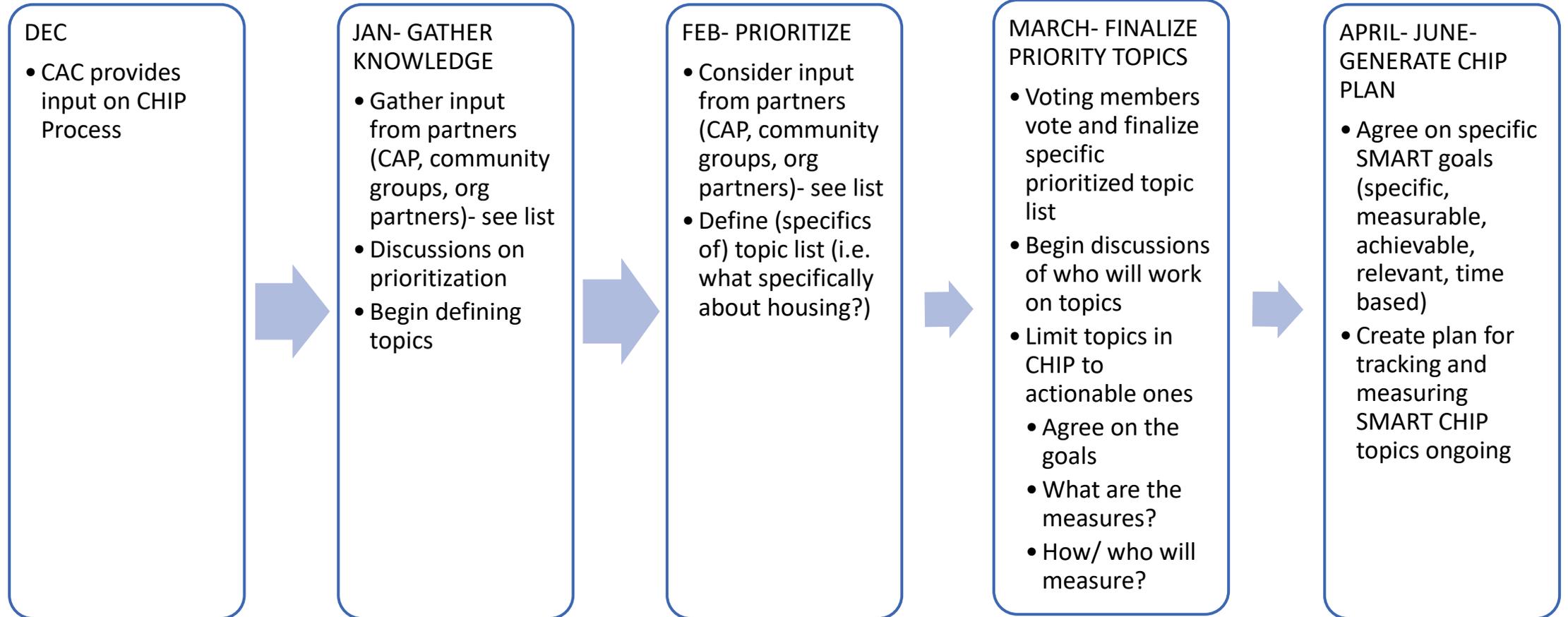
2019 results on Adult Health and Healthcare Access

- Obesity or overweight was the top chronic condition (30%)
- 7.5% experience A LOT of Difficulty with Walking
- Half of smokers would like help quitting
- From the Consumer Survey for adults seeking needed services:
 - 8.6% did not get needed medical care
 - 25.1% did not get needed dental services
 - 23.6% did not get needed mental health services
- 46.7% of the uninsured went without medical care

2019 results on Stable Health Insurance

- Medical Care Insurance:
 - 86.2% had insurance for the past 12 months
 - 5.8% had insurance for some of the 12 months
 - 8.0% had no insurance for the past 12 months
- Dental Care:
 - 64.5% had dental insurance for the past 12 months
 - 8.5% had dental insurance for some of the 12 months
 - 27.0% had no dental insurance for the past 12 months
- Vision Care:
 - 61.0% had vision insurance for the past 12 months
 - 7.5% had vision insurance for some of the 12 months
 - 31.5% had no vision insurance for the past 12 months
- Long-Term Care
 - 35.8% have Long Term care insurance for the past 12 months
 - 2.7% had Long Term care insurance for some of the past 12 months
 - 61.5% had no Long-Term care insurance for the past 12 months

Steps to Gorge CHIP Updated: Jan 2020



CITY COUNCIL WORKSHOP COVER SHEET

Meeting Date: January 20, 2021

To: City Council

From: Dustin Nilsen, Director of Planning

Subject: Middle Housing Code Update (LEG 2020-37)

Background:

Developing code language for missing middle housing types (duplexes, triplexes and small cottages) is a project on the City Council 2020 workplan. The purpose of the project is to establish a clear process and regulatory framework to allow greater diversity of housing types and needed housing types.

On January 11, 2021, Council held a work session on this topic to discuss policy issued raised in the code update. These policy issues focused on parking and the tensions between development scale, compatibility, and marketability. City Council was supportive of a reduced parking regulation and expressed concern over the gap between the middle housing development outcomes when compared against larger and less affordable townhouse developments permitted by Code. Council directed staff to adjust the code to narrow the gap to incentive the development of smaller units.

Based on Council direction, staff revised the draft code to allow more square footage to be built within a middle housing development and recommended a cap on the individual dwelling unit size with the intent of keeping the units within the range of entry levels of Hood River's market rate housing (120-125% MFI) and to close a potential loophole for large dwellings. The buildable area increases, along with the proposed expedited permitting process, dwelling unit bonuses, elimination of minimum lot sizes, and minimum lot frontages, are all included in the draft code to incentivize the construction of middle housing developments.

On January 19, 2021, staff presented the revised draft code to the Planning Commission. Staff solicited input from various local builders and developers including Mike Ketler of IBC, Greg Crafts, Nancy Roach, Mike Kitts, Doug Beverage, Eli Spevak of Orange Splot, Joe Sagar of Sagar Design Build. During the public hearing, the Planning Commission, and representatives of the development community, who responded to staff requests for comments, including Mike Ketler, Greg Crafts, and Nancy Roach also their expressed concern over the ability to deliver smaller units under code limitation intended to promote compact developments in scale with existing neighborhoods. This concern is exacerbated by the growing demand for Hood River's already expensive and limited land supply. Planning Commission deliberated the code and discussed some of the issues raised in the public hearing.

Although Planning Commission did not reach a final code recommendation to submit to the City Council, Planning Commission reached consensus to evaluate additional amendments to the middle housing code to increase the number of units allowed, including the review of

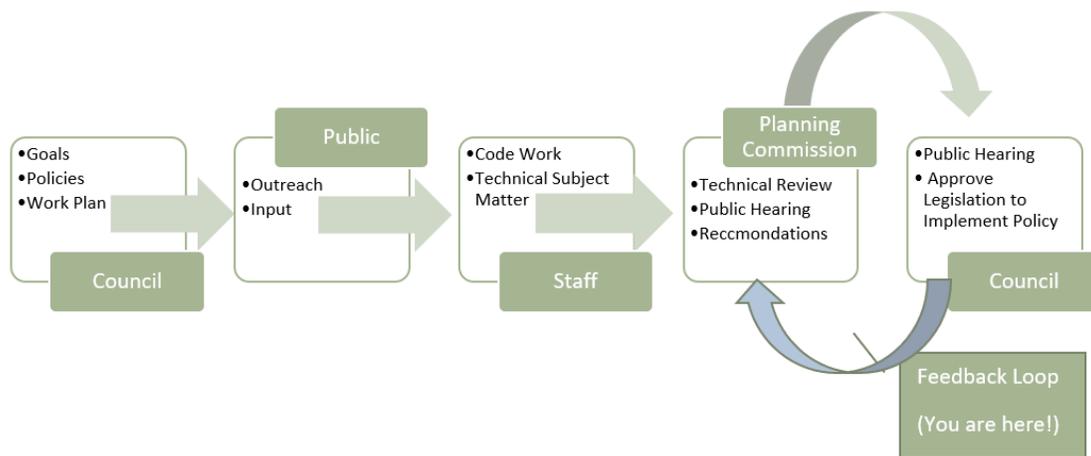
a lower dwelling to area ratio, a flat rate landscape standard in lieu of a lot-coverage requirement, and a code methodology that would further incentive the development of smaller units.

These amendments are included in the attached chart. The chart provides a side-by-side comparison of Hood River existing Zoning code requirements, staff draft proposal, and requested amendments.

Staff requests Council direction on the latest amendments outlined in the chart including preferences, concerns, or support for a lower area to dwelling ratio, increased lot coverage, and corner height requirement.

Based on Council feedback and direction staff intends to solicit additional designs from representatives from the development community, who volunteered to provide analysis and test fits for marketability. These will be presented to the Planning Commission and then to Council during final deliberations.

Where we are in the Process:



Staff Recommendation

Staff recommends that Council provide direction on the latest amendments to the Middle Housing Code including its preferences, concerns, or support for a lower area to dwelling ratio, increased lot coverage, and corner height requirement.

Attachments

Side by Side Code Comparison

Middle Housing Code Matrix

	Zone	R-1 Current Code	R-1 Draft Code	R-1 Revisions to be presented based on PC Feedback	R-2 Current Code	R-2 Draft Code	R-2 Revisions to be presented based on PC Feedback	R-3/C-1 Current	R-3/C-1 Draft Code	R-3/C-1 Revisions to be presented based on PC Feedback
	Maximum Unit/Area Ratio	1 dwelling per 7,000 (Non ADU) 1 dwelling per 3,500 with ADU (SFD Only)	1 dwelling per 2,500sf Detached	1 dwelling per 2,500sf Attached or Detached	1 dwelling for first 2,500sf and 1,500 after	1 dwelling per 1,500sf Attached or Detached	1 dwelling per 1250 (800 square feet and Under 1 dwelling per 1500 (800-1200 sq ft)	1 dwelling for the first 2,500sf and 1,500 after	1 dwelling per 1,500sf Attached or Detached	1 dwelling per 1250 (800 square feet and Under 1 dwelling per 1500 (800-1200 sq ft)
A	Minimum Lot or Parcel Size* Site	7,000* SF	5,000 SF Site N/A on individual lots	5,000 SF Site N/A on individual lots	5,000* for first two units (Or any lawful lot)	3,000 SF Site N/A on individual lots	2,500 SF Site N/A on individual lots	5,000* for first 2 units no min lot after that.	3,000 SF	2,500 SF Site N/A on individual lots
	*Existing and legally established lots may be use so long as they meet standards.									
B	Maximum Lot Coverage	40%	50%	N/A (30% Landscape req.)	45%	55%	N/A (30% Landscape req.)	55%	65%	N/A (30% Landscape req.)
	Additional lot coverage allowed with front porch (when porch meets standards of 17.04.120(B)(2))	43%	3%		48%	3%		58%	3%	
	Additional lot coverage allowed with detached rear garage	45%	5%		50%	5%		60%	5%	
	Total Possible	48%	58% Site Total	70%	53%	58% Site Total	70%	63%	58% Site Total	70%
E	Lot Frontage	50' 30' on a cul de sac	0	0	50' 30' on a cul de sac 0 for townhomes	0	0	50' 30' on a cul de sac 0 for townhomes	0	0
	Building Height Limit	28'	25'	25' except 28' for corners lot with sprinklers & FD approved access	28'	25'	25' except 28' for corners lot with sprinklers & FD approved access	28' R-3 35' C-1	25'	25' except 28' for corners lot with sprinklers & FD approved access
	Upper grade to ridge	N/A	25'	25'	N/A	25'		N/A	25'	
	Upper grade to eave	N/A	20'	20'	N/A	20'		N/A	20'	
J	Parking Requirements									
	Minimum number of parking spaces required per dwelling	1	1	2	2	1	1	2	1	1
	Maximum number of parking spaces per dwelling	N/A	2	N/A	N/A	2	N/A	N/A	2	N/A

CITY COUNCIL AGENDA ITEM COVER SHEET

Meeting Date: January 25, 2021

To: Honorable Mayor and Members of the City Council

From: Mark Janeck, Director of Public Works

Subject: Award Professional Service Contract for Sanitary Sewer Infiltration & Inflow Study

Background:

The “Infiltration and Inflow Project” is a project on the 2020 Council Work Plan. The purpose of this project is to refine and prioritize a construction plan to repair or replace clay sewer pipes and lead-jointed water lines. The purpose of this legislative item is to approve a professional services contract to conduct an infiltration & inflow study within the clay pipe locations of the City’s sewer system, a project map is attached.

The City’s wastewater system includes approximately 52 miles of collection pipelines, with approximately 40,000 linear feet of that pipeline consisting of aged and deteriorating clay sewer lines that are past their useful life. Groundwater from rain events can seep into cracked pipes, cross connection of storm and sanitary pipes, and storm water overflows, can infiltrate these deteriorated sanitary sewer lines and increase the amount of flow into the wastewater treatment plant. This increased flow can amount to 150% of normal sanitary sewer flow, creating an influx of unnecessary groundwater and stormwater into the wastewater treatment plant making our processing less efficient and at times resulting in DEQ violations due to emergency releases into the Columbia River. The most common infiltration occurs when underground water seeps into the cracked pipe sections or pipe joints, as well as deteriorated catch basins or private foundation drains connected to the sanitary sewer system rather than the storm sewer system.

The City is aware of some locations where the clay sewer lines are failing and have already begun the design work for the replacement of these pipes, with construction scheduled to begin in the Spring. This Infiltration & Inflow (I&I) study will focus on the older clay pipe sections of the City and allowing City Staff to prioritize future projects to address I&I by identifying the areas creating the largest amounts of additional flow to the wastewater treatment plant. To perform this study, the consultant will use various methods such as smoke testing, manhole inspections, flow monitoring, and CCTV (closed-circuit television).

The City issued a request for proposal (RFP) from qualified firms to identify significant I&I sources within the City’s Sanitary Sewer Collection System. The City set a budget of \$100,000 for this project to include the development, performance, and analysis of

data collection, and the completion of a Study Report which documents I&I related work and prioritizes, quantifies, and recommends collection system improvements for the City. Analysis of the proposals included whether the companies met the City's budget, the proposed schedule date of completion, experience with similar I&I projects, access to flow monitors and smoke equipment, personnel involved in the project, and experience with Hood River.

Starting December 16, 2020, this RFP was advertised in the Oregon Contractor Plan Center, Daily Journal of Commerce, Tri City Construction Council, Premier Builders Exchange, Salem Contractor Exchange, SW Washington Contractors 7017, Hermiston Plan Center, Central Oregon Builders Association, McGraw-Hill Construction Dodge, Construct Connect and the Columbia Gorge News.

Four firms submitted proposals on January 11, and were evaluated by the Public works Engineering staff using the 'Content and Evaluation Criteria' provided in the RFP. The four firms were Tetra Tech, Keller Associates, Leeway Engineering Solutions, and HBH Consulting Engineers. HBH Consulting Engineers had the highest cumulative score.

Staff Recommendation:

Authorize the City Manager to sign a professional services contract with HBH Consulting Engineers to conduct a Sanitary Sewer Infiltration & Inflow Study in an amount not to exceed \$100,000.

Suggested Motion:

I move that we authorize the City Manager to sign a professional services contract with HBH Consulting Engineers to conduct a Sanitary Sewer Infiltration & Inflow Study in an amount not to exceed \$100,000.

Alternatives:

Do not authorize the signing of the professional service contract and provide other direction to staff.

Fiscal Impact:

This project is not currently within our Capital Project list for 2021. Monies are anticipated to be available from the Storm Water, and Sewer budgets, as well as anticipated project approval within the 2021/2022 Capital Project budget.

Attachments:

Draft Scope of Services
Project Map



Proposal

City of Hood River Sanitary Sewer Infiltration & Inflow Study



501 E First Street | Newberg, OR 97132
Main 503-554-9553 | Fax 503-537-9554
achernishov@hbh-consulting.com

CIVIL
WATER
MUNICIPAL
WASTEWATER
ENVIRONMENTAL
TRANSPORTATION



501 E First Street
Newberg, Oregon 97132
phone 503-554-9553
fax 503-537-9554

January 11, 2020

Director of Public Works
City of Hood River
1200 18th Street
Hood River, OR 97031

RE: Sanitary Sewer Infiltration & Inflow Study

Dear Selection Committee Members,

HBH Consulting Engineers, Inc. is pleased to submit our proposal for the City of Hood River’s Sanitary Sewer Infiltration and Inflow Study. Our intent with this proposal is to illustrate the level of expertise and experience available through the engineers at HBH, and specifically through our designated design team. Our proposal details the significant amount of experience and knowledge we have with Inflow and Infiltration studies and specifically with the unique challenges of collection systems.

The most important point that we would like to confer is the sense of responsibility we take on as your engineer. As a small, Oregon-based firm, we have built our reputation on our service and expertise. Despite our small size, we can offer up a project team comparable to our larger competitors. The differences are a lower overall cost due to lower overhead and a project manager who is also an owner of the company. We look forward to furthering our relationship with the City while assisting with resolution and cost-effective solutions to upcoming City needs.

HBH has read and will sign the Personal Services Agreement without changes as included in the RFP. Michael Henry, PE, Robert Henry, PE, and Andrey Chernishov, PE, CWRE, are all authorized to sign contracts for the firm. Andrey Chernishov will be the Project Manager and main contact for any correspondence, negotiations, contracts, and amendments. At a minimum, all terms, conditions, and scope of services are hereby included within our proposal. HBH has the financial and personnel resources needed to successfully provide development engineering services to the City of Hood River.

Should you have any questions, please do not hesitate in contacting us directly at 503-554-9553. We welcome the opportunity to discuss any aspect of our firm.

Sincerely,
HBH Consulting Engineers, Inc.

Andrey Chernishov, PE, CWRE; Secretary/Treasurer/Project Manager
ph: 503-554-9553 | fax: 503-5537-9554
email: achernishov@hbh-consulting.com





Proposal
City of Hood River
Sanitary Sewer Infiltration & Inflow Study

INSURANCE COVERAGE

HBH Consulting Engineers, Inc. carries a \$2 million Professional Liability Insurance policy to secure all our professional work. In addition, we have a comprehensive General Liability Insurance policy of \$2 million. We also carry Automobile Liability Insurance and full Workers' Compensation Insurance.

COMPUTER EQUIPMENT

HBH has the latest software products available for all its project team members. All project engineers, as well as project managers, are trained in AutoCAD Civil 3D and have the latest version of the software. Other available software programs for the purposes of modeling various infrastructure include the following: Esri Arc Map (GIS), HydroCAD (hydrology/hydraulics) and PCSWMM (wastewater collections).

We will present all electronic deliverables in a format that is compatible with current City equipment and software. All deliverables will be compatible with the City's version of one of the following programs: Microsoft Word • Microsoft Excel • AutoCAD • Adobe.

CONSULTANT FIRM QUALIFICATIONS



General Qualifications and Experience

HBH Consulting Engineers, Inc. was incorporated in 1997 with the goal of offering a higher level of engineering services to our clients. Over the past **twenty-four** years, HBH has provided excellent service and assistance to **small and mid-sized communities** in a number of fields, including infrastructure planning, design, and construction management; funding assistance; regulatory compliance; and general technical support. In our approach to this work, we have coordinated our efforts with the needs of our clients and the requirements of regulatory agencies to develop high quality, **cost-effective and innovative** solutions within budget and on schedule.

- | | |
|---------------------------------|------------------------------|
| ✓ Inflow & infiltration Studies | ✓ Facilities Plans |
| ✓ Flow Monitoring | ✓ Wastewater Treatment |
| ✓ Smoke testing | ✓ Wastewater Collection |
| ✓ Night-time Monitoring | ✓ Pump Stations |
| ✓ Field Investigations | ✓ Force mains |
| ✓ CCTV review | ✓ Permitting |
| ✓ Master Planning | ✓ General Engineering Advice |

At HBH, we develop strong relationships based on outstanding service and trustworthiness. Many of our clients have been working with us for over a decade.

We are a small firm with the collective expertise of our larger counterparts. Of our nine employees, **six of them are Professional Engineers**. We are careful to maintain adequate staff to promptly meet all our clients' needs with high-quality products.

Specific Areas of Expertise Applicable to this Project

Smoke testing consists of blowing smoke into the sewer system through a manhole and looking for places where smoke comes out that it should not, such as storm sewer cross sections, broken pipes, or a staircase (as shown to the right). HBH staff have completed smoke testing in a variety of cities around Oregon (see list in the next sub section). We own smoke testing equipment and have become efficient at both data collection, and mapping of problem areas.



System inspections consists of looking at photos or actual conditions where Inflow and Infiltration (I/I) can be visually identified. One type of inspection is nighttime monitoring, which occurs when wastewater base flows are very low (2-4 am) on days that are forecasted to have a large storm during the wet season when groundwater levels are high. Basins are traced from downstream to upstream to look for major differences in flow between manholes. Significant changes in short sections indicate higher I/I. These investigations are typically part of I/I studies and often wastewater master plans and wastewater facilities planning studies completed by HBH staff members.

CCTV inspections will be recorded by a CCTV company and analyzed by HBH staff. This method is typical of all the projects we have worked on. The CCTV can capture footage of the I/I sources and see problems inside the pipe. After the video is recorded, it will be reviewed using the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) methods. NASSCO provides the North American Standard for pipeline defect assessment and identification.

Flow monitoring is performed in wet weather and dry weather to compare base flows vs I/I flow. HBH uses rental flow meters. Since the technology for this equipment is constantly updating, we have found that better results are possible when renting units as opposed to owning the equipment. This way, when a flow meter is not functioning properly, a new one can be overnight mailed and installed right away as opposed to trying to fix the problem in peak rain season, and all the newest technology is available at all times.

Similar Projects Relevant to this project

HBH's engineers have been involved in all of the stages of formal I/I studies. Many of our other projects have also included portions of I/I studies such as smoke testing, flow analysis, I/I quantification, NASSCO pipe video reviews, flow monitoring, and nighttime monitoring. The following projects provide a sampling of our experience. Four specific example projects are shown with full details including type, size, and location. The references are consolidated in the table below for easy reference. A list of additional projects is provided later to show our breadth of experience with I/I projects.

SIMILAR PROJECT REFERENCES

City of Newberg – Paul Chiu, Senior Engineer; 414 E First St Newberg OR; (503) 554-1751;
paul.chiu@newbergoregon.gov

City of Depoe Bay – Brady Weidner, Superintendent; (541) 765-3005; weidner@cityofdepoebay.org

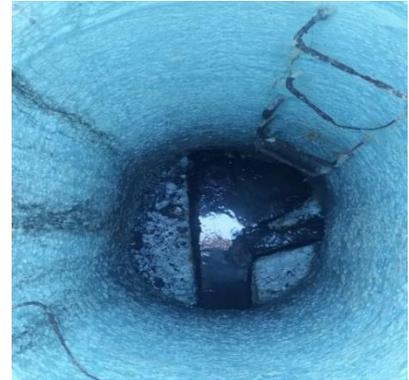
City of Ashland – David Gies, Wastewater and Water Re-use Supervisor; 90 North Mountain Ave, Ashland, OR;
 (541) 488-5348; (541)-552-2335; giesd@ashland.or.us

Yamhill County – Mark Lago, Public Works Director; 2060 Lafayette Ave, McMinnville, Oregon 97031;
 (503) 434-7515; lagom@co.yamhill.or.us

City of Newberg - Sanitary Sewer Inflow and Infiltration Study

Andrey Chernishov and Natalie Jennings spent over a year working on a large scale I/I investigation for the City of Newberg. Andrey and Natalie made up two of the four staff on the project team while working at a previous firm and had a significant role in every step of the project.

The City of Newberg Wastewater collection system Includes over 80 miles of gravity pipelines, five miles of wastewater force main, eight pump stations, 1,600 manholes, and 620 cleanouts. The Sewerage Master Plan Update identified two basins with high I/I, Dayton Basin and Wynooski Basin. Most of the pipes in these basins were significantly older than the rest of the system. In addition, many of the pipes in these areas were **clay pipes, which are particularly prone to infiltration.**



Using pump station pumping records to verify the findings of the Sewerage Master Plan, the I/I study team concluded that the Dayton and Wynooski Basins should be the primary focus for the study. The study included additional pump station run time analysis, **continuous flow monitoring** at eleven locations, **video inspection** of approximately **80,000 linear feet** of pipelines, **smoke testing** of approximately **110,00 linear feet** of pipelines, and **night-time monitoring**. The results of each investigation method were used to inform the focus of the subsequent methods. The project team delivered a cost-benefit analysis along with several maps and prioritization of pipe segments to be upgraded or repaired.

Team members: Andrey Chernishov, Natalie Jennings

City Size: 24,045

Type: I/I Study

Location: Newberg, OR

City of Depoe Bay and Gleneden Beach Sanitary District - Sewer Inflow and Infiltration Analysis

Depoe Bay and Gleneden Beach Sanitary District (GSD) both share a single wastewater treatment plant (WWTP), and each directs its wastewater to the WWTP independently. Depoe Bay has an acknowledged inflow and infiltration (I/I) issue within its system, but there was disagreement as to whether or not the GSD system also has I/I deficiencies. As a part of a larger project, HBH was contracted to determine whether or not GSD's system has a substantive I/I problem, and to quantify I/I contributions to the system.



HBH analyzed pump station and wastewater treatment plant flows along with precipitation data to determine seasonal trends.

The team utilized standard DEQ methodology to determine the quantity of I/I that belonged to the Depoe Bay system and the Gleneden Beach system. Using additional statistical methods, the team verified the analysis results. The study determined that the Depoe Bay collection system was subject to summer I/I due to ocean intrusion in addition to the seasonal I/I intrusions while the Gleneden Beach system was purely subject to wintertime I/I. The results were quantified and delivered on time and on budget concluding the I/I portion of the project.

Team members: Mike Henry, Rob Henry

City Size: 1,445

Type: I/I Analysis

Location: Depoe Bay, OR

City of Ashland- Sanitary Sewer Inflow and Infiltration Study

Andrey Chernishov and Natalie Jennings worked on the City of Ashland's Sanitary Sewer Inflow and Infiltration Study while working at a previous firm. The City of Ashland wastewater collection system included 110 miles of gravity sewer and eight lift stations. The Comprehensive Sanitary Sewer Master Plan had identified significantly increased flow rates at the Wastewater Treatment plant during storm events. Oregon DEQ required that an I/I study would be required before state revolving loan funds could be used for treatment plant expansion projects. The study identified basins and subbasins with the highest inflow and infiltration.

The project team began by analyzing existing documentation, including the Sanitary Sewer Master Plan. They compared the ratio of wet weather to dry weather flow. This information was used in conjunction with information about the age of the pipes to identify the most problematic basin within the system, Basin 7. This basin was chosen for **smoke testing, visual night-time field investigations, and continuous flow monitoring** at strategic locations. Each set of field investigations were used to target the investigations that followed.

Smoke testing revealed several stormwater cross-connections and numerous problem areas related to broken or missing cleanout caps located in the service laterals. At the project team's recommendation, City Staff performed visual night-time field investigations in problem areas identified by smoke testing. The project team installed **continuous flow monitors**. These were primarily located in aged sections of the sanitary sewer collection system. **The flows were used to identify the sub-basin with the highest levels of I/I.**



To evaluate the remaining basins, the project team analyzed existing weekly pump station run times at City pump stations. Four pump stations were chosen to acquire daily run times. Analysis of daily run times indicated that shallow groundwater infiltration was likely occurring in the basin contributing to those pump stations. The project team recommended periodic monitoring for the areas and further investigation in critical areas. The project team provided a **cost-benefit analysis of available measures to reduce inflow and infiltration.**

Team members: Andrey Chernishov, Natalie Jennings

City Size: 20,960

Type: I/I Study

Location: Ashland, OR

City of Hood River - Wastewater Master Plan Update

The purpose of the City of Hood River's Wastewater Master Plan Update was to review the City's existing wastewater system, which included the collection and treatment facilities. Each of the system's components were assessed on their existing condition and ability to meet projected flows through the planning period. Based on these assessments, recommendations were developed for a capital improvement plan for the City's wastewater collection and treatment facilities.

HBH **evaluated Inflow and Infiltration (I/I)** as a part of the Wastewater Master Plan Update. The total amount of I/I entering the Hood River collection system depended on the flow conditions. An estimate of the system's base flow was required to approximate the amount of I/I in the system during various flow conditions. The base flow is defined as the sanitary sewer flow without any inflow and/or infiltration. For the City of Hood River, the base flow was calculated based on the average daily flows between July and September, excluding any days where rainfall occurred. By using these months, the influence of rainfall and high groundwater was largely eliminated, which allowed and accurate estimate of the City's base flow.



Inflow conditions were analyzed based on the largest rain events and the corresponding flows that occurred. This analysis determined that the City's average inflow condition was below the EPA criteria for non-excessive inflow, but that the infiltration rates were above the EPA's criteria for non-excessive infiltration. The Wastewater Master Plan Update recommended the replacement of large portions of the City's collection system, which consisted of old, clay pipe.

Team members: Mike Henry, Rob Henry

City Size: 8,305 people

Type: Master Plan with I/I components

Location: Hood River, OR

The Following Projects Included I/I Analysis:

All the projects listed included key staff members who will be used on the City of Hood River’s Sanitary Sewer Inflow & Infiltration Study.

- Ananda-Laurelwood Academy - Collection System Smoke Testing
- City of Amity - Wastewater Facility Plan Amendment & I/I Reduction Improvements
- City of Bay City - Main Pump Station Pre-Design
- City of Bay City - Wastewater Facilities Plan
- City of Depoe Bay - Wastewater Master Plan Update
- City of Detroit - Sewer Feasibility Plan
- City of Falls City - Wastewater Facilities Plan
- City of Hood River - Wastewater Master Plan Update
- City of Monmouth - Wastewater Master Plan
- City of Powers - Wastewater Facilities Plan
- City of Riddle - Wastewater Facilities Plan
- City of Rockaway Beach - Wastewater Master Plan Update
- City of Sheridan – Monroe Street I/I Reduction Improvements
- City of Willamina - Wastewater Facilities Plan Update
- Fishhawk Lake - Pump Station Study
- Tri-City Sanitary District - Wastewater System Master Plan/Design
- City of Depoe Bay - Wastewater Plan Update
- City of Junction City - Evaluation/Options for Wastewater Facilities Plan



The following projects were completed by current HBH staff while working at a previous firm:

- City of Newberg – Sanitary Sewer I & I Study (Andrey & Natalie)
- City of Ashland – Sanitary Sewer Infiltration and Inflow Study (Andrey & Natalie)
- City of Willamina – Inflow and Infiltration Reduction Study (Rob)
- City of Garibaldi - Inflow and Infiltration Study (Rob)
- City of Portland -Tryon Creek I/I Abatement Projects (Rob)
- City of Portland – Hillsdale I/I investigations (Natalie)
- City of Dayton – Smoke Testing (Andrey & Natalie)
- City of Dayton - Wastewater Facilities Improvements (Rob)
- City of Yamhill - Wastewater Facilities Plan (Rob)
- City of Yamhill – Smoke testing & Wastewater Facilities Planning Study (Natalie)
- Port of Tillamook Bay - Wastewater Facilities Plan (Rob)

KEY PERSONEL QUALIFICATIONS

Michael Henry, PE (Oregon License #10443PE) – Mike will serve as the **Principal-In-Charge (PIC)** for the project. In this capacity, he will oversee all work completed by HBH or our subconsultants. Mike is registered as both a Civil Engineer and Environmental Engineer in the State of Oregon. As the President of HBH and lead engineer with over **50 years of experience** in the municipal engineering field, he has worked on an impressive range of projects. Mike’s wastewater experience includes the **design for over 150 miles of public wastewater collection systems**.

Mike served as the Principal-In-Charge for the **City of Hood River’s Wastewater Master Plan and Wastewater Facilities Plan**.

Prior to starting HBH, Mike provided I/I and Sewer System evaluation studies (SSES) for the coastal communities of Seaside, Cannon Beach and Astoria. Mike has served as the City Engineer for many Oregon communities, including the cities of Bay City, Willamina, Dayton, Yamhill, Gervais, Amity, and Hubbard, among others. He is currently the primary City Engineer for the City of Rockaway Beach and the City of Junction City, as well as District Engineer for the Oceanside Water District.

As Principal in Charge, Mike is accustomed to handling a variety of tasks ranging from answering brief engineering, or administrative questions to providing project management for large wastewater or water projects. He is an expert in wastewater design, including SBR treatment facilities, lagoons, pump stations, gravity collection, and pressure sewers. He is highly qualified in I/I investigation and abatement, severing as an I/I expert for CH2M Hill in Oregon for 7 years. Additionally, Mike has extensive water experience, including design and project management of treatment facilities, piping, booster pump stations, and reservoirs. Furthermore, he has provided numerous Capital Improvement Plans for water, sewer, storm, and transportation and has spent many years performing municipal land use planning work.

Mike has developed excellent working relationships with various regulatory agencies and navigated through the application, award, and administrative processes associated with numerous funding programs. Mike has worked closely with DEQ on many projects and has a great working relationship with many of their agents and a clear understanding of their requirements. He has also completed many permit applications necessary for civil projects, including County and ODOT construction permits, Categorical Exclusions, building permits, Army Corps of Engineers Joint Permits for in-stream work, and numerous easements.

Mike provides the seasoned experience that is critical for any engineering team to achieve the highest level of success. This wealth of experience can be drawn upon at any time throughout the project.

Andrey Chernishov, PE, CWRE (Oregon License #76347PE, #76347CWRE) – Andrey will serve as the **project manager** and will be directly responsible for the projects, as he will be the primary contact for the City. He has over **15 years of post-graduate experience** in Civil Engineering, Transportation Engineering, System Master Planning, and Project Management. He has completed Inflow & Infiltration projects for four cities and completed six wastewater planning studies.

Andrey served as the primary engineer for the City of Ashland and City of Sheridan Wastewater Facilities Plans (WWFP). Andrey was a key team member for the **Newberg Sanitary Sewer Inflow & Infiltration Study**. For the project, Andrey received a **NASSCO certificate for PACP, MACP, and LACP** specifically for **reviewing the City's wastewater collection system CCTV video**. Andrey has also authored the **I/I study for the City of Ashland and City of Stayton's Inflow & Infiltration Reduction Project**. Each of these projects included extensive inflow & infiltration investigations, including **flow monitoring, CCTV review, smoke testing, and nighttime monitoring**.

Andrey was the project manager for a project by the name of Southern Flow Corridor for Tillamook County and the Port of Tillamook Bay, which **won an ACEC Engineering Excellence Grand Award in January 2018**.

Andrey's hands-on approach to project management helps to make sure that his projects receive the full benefit of his experience. Andrey worked on the City of Hood River's Wastewater Facilities Plan, and he served as the HBH project manager for the City of Hood River's Waste Activated Sludge Aeration Basin Splitter Box Odor Control project, Hood River Project Management Services, and Hood River Development Engineering Services.



Robert Henry, PE (Oregon License #19191PE) – Rob will provide quality control and assurance for all work completed by HBH or our subconsultants. With over 25 years of experience in the municipal engineering field, Rob is a Principal and co-founder of HBH. Rob regularly provides project management and quality control for design projects as well as master plans and feasibility studies. Rob has also provided project management for numerous water and wastewater projects, including treatment plants, pump stations, pressure mains, master plans, and

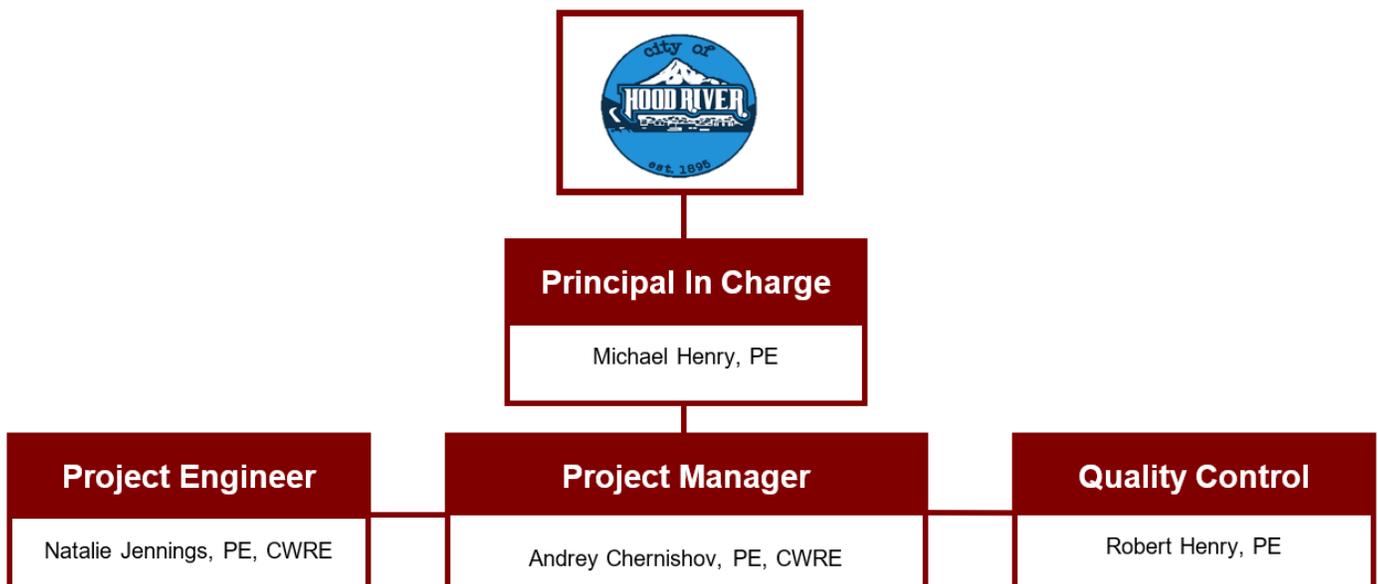
feasibility studies, many of which included I/I investigations. His specific experience with I/I also includes the Laurelwood Academy Collection System Smoke Testing, City of Garibaldi Inflow and Infiltration Study, Depoe Bay I/I Flow Monitoring and Smoke Testing, City of Lebanon Westside Interceptor I/I Investigation, City of Amity I/I Investigation and Improvements, City of Willamina I/I Investigation and Improvements, and many others associated with Wastewater Master Plans and Facilities Plans.

Rob oversaw the Oregon Drinking Water Circuit Rider Program for over a decade, which provides water systems throughout the State with free technical assistance. Through this program, he provided system assessments, start-up and troubleshooting assistance, recommendations, and advice to water systems for system improvement. He also aided in training of plant personnel. Rob's oversight contributed to the phenomenal success of the Circuit Rider program. Rob served as Principal-In-Charge for the **City of Hood River's Waste Activated Sludge Aeration Basin Splitter Box Odor Control project**, and he served as the Project Manager for **the City of Hood River's Wastewater Master Plan and Wastewater Facilities Plan**.



Natalie Jennings, PE (Oregon License #89834PE) – Natalie is a project engineer with over nine years of post-graduate experience in engineering studies, analyses, and master plans. She is an **expert in I/I studies**. While at previous firms, she was a key team member in the completion of the **I/I study for the City of Newberg**. She has also completed **I/I tasks for the Cities of Portland, Dayton, Ashland, and Yamhill**. During these projects, she performed smoke testing, flow monitoring, NASSCO pipe rating using CCTV footage, nighttime monitoring, and mapping. Natalie has proven adept at planning for community infrastructure systems. She has acted as lead author for 18 Master Plans Facilities Plans, SDC Methodologies, Feasibility Studies, and Water Management and Conservation Plans. This work requires an acute understanding of State and Federal regulations, data analysis, hydraulic modeling, cost estimating, and technology, as well as a clear understanding of priorities, goals, needs, and available resources of the City. Natalie is very organized and will keep all of the project details moving along to shape together the full I/I study.

Her most relevant project was the **Newberg Sanitary Sewer I/I Study**. It was nearly identical to this one and included flow monitoring, field observations, nighttime inspection, smoke testing, pump station/ WWTP runtime analysis, and CCTV review for pipes. For that project, she was the primary engineer on the project, in a role very similar to what her role would be on this project.



QUALITY OF CLIENT SERVICE AND WORK

Ability to Establish and Maintain Functional, Productive Working Relationships

Functional, productive working relationships are an essential part of doing business as an engineering firm. The fact that HBH has been in business for over 20 years speaks to our ability to establish and maintain these relationships.

Our clients have demonstrated satisfaction with our work by working with us on project after project. As described on the next page, **many of our clients have been with us for over a decade**. The City of Newberg became a repeat client just in the last few years. In 2018, the City of Newberg contracted HBH to work on the GFU Fire Flow Waterline Improvements project. Then later, the City contracted HBH first for a Wastewater project, then a transportation project, the shortlist for future projects and the stormwater master plan.

During construction, we make sure that the City gets an excellent system even if the project gets stuck with a subpar construction contractor. HBH adjusts levels of oversight and consistently engages the contractor to make sure that the system is built to the high-quality standards that the City deserves. We also have excellent relationships with a number of contractors who provide excellent work. We continue to recommend these contractors to clients and work with them on a yearly basis.

We also maintain solid working relationships with vendors. Precision Pumps has worked with us on a variety of projects. Flygt Pumps has also been one of our preferred vendors. WesTech Engineering, a vendor based out of Utah, who provides water treatment plant solutions, has also been an excellent collaborator for a number of years.



HBH's ability to maintain positive long-term relationships extends to the company's staff as well. Over the years, when various staff members have left to pursue other opportunities, HBH has maintained a positive relationship with former staff members. For example, one of our engineers, Natalie Jennings, worked at HBH from 2016 to 2018. She left to pursue a career building opportunity with another company. She stayed in touch with HBH, and in 2019, she came back to work at HBH again.

Accessibility to City Staff in Hood River and Availability for Meetings.

HBH is located in Newberg, Oregon, a 90-minute drive from Hood River. We can be available for a physical meeting within a few hours, and we are always available for a phone call or video call. **Our goal is to make the City feel as if HBH is an extension of the City Engineering Department**, and our project team will be as responsive as expected from a City employee. One of the reasons that clients choose to work with HBH year after year is our highly responsive project approach to working with our clients. We are always willing to take a call, regardless of the timing.

Internal Procedures and Policies for Quality Assurance and Cost Control

Delivering excellent quality work is of the greatest importance to us at HBH. Rob Henry will review completed deliverables to provide quality control and assurance. **We provide quality work through systematic reviews** throughout a project's life. Rob Henry will provide quality assurance such that all deliverables have been peer reviewed prior to submittal to the City.

Andrey Chernishov, PE will be the Project Manager and be the primary contact for the City. The project will fall under his supervision. As the project proceeds, Andrey will frequently communicate with the City to stay on schedule. Andrey Chernishov will assign tasks to the appropriate staff and/or subconsultant. HBH uses senior staff members to outline the preliminary steps of a project. These staff members continue to be involved in the project through design, permitting, and construction and will report to Andrey on a weekly basis. Andrey will assign additional staff as needed to ensure your project stays on schedule.

We control the cost of a project by setting clear goals for the work to be accomplished and by establishing milestones, which we discuss with the City. HBH staff members meet in-house regularly to discuss project status, timelines, and key issues. This facilitates cost control while simultaneously playing a critical role in keeping the project on schedule. Our communication practices make us more efficient when a project is going smoothly, but they become especially important when we encounter the changing conditions that can often occur through the course of a project.

For example, during the City of Newberg 2nd, 3rd, & 6th St Wastewater Replacement project, HBH determined that it was advisable to add several blocks of wastewater main to the project. We worked with the City project manager to adjust the project. As the City was able to provide inspection, we reduced our inspection time. This **allowed us to complete the project both on schedule and within budget, even with the additional improvements.**

A project referred to as the Southern Flow Corridor aptly demonstrates our approach to adapting changing conditions on a project. The project was designed to reduce flooding impacts to the City of Tillamook and provide environmental restoration to nearby areas. During construction, a large storm washed out existing levees protecting the site and caused damage to the Contractor's worksite. Daily inundation completely altered site conditions, making environmental restoration difficult. **HBH worked with the client and the contractor to establish a set of milestones** that would repair damage to the site, complete the environmental restoration, and achieve project goals of mitigating future flood damage.

As another example, during the City of Detroit's Water Distribution System Replacement project, the City received an ODOT grant to repave three streets where water lines were to be replaced. To make sure the water lines went in before the streets were paved, **HBH accelerated that part of the contract and split the project into two bids** with approximately 6,000 ft of pipe bid in Phase 2A and 12,000 ft of pipe designed in Phase 2B. We then assigned additional staff to that the project to make sure it was ready for bid in time to allow the waterline construction to be completed on time.

As demonstrated by the previous examples, our approach to quality assurance and cost control is characterized by strong communication, transparency, and a willingness to work with the City to adapt to changes.

Long-Term Client/Firm Relationships

At HBH, we develop strong relationships based on outstanding service and trust. Many of our clients have been working with us for over a decade. We take an **open, interactive approach that leads to solutions that are tailor-made for the individual needs of the City.** One of the reasons that our clients choose to continue working with us is that we consistently engage City staff to identify the City's needs and incorporate City staff's input into the project design. We also make ourselves available to listen to concerns and provide advice when issues arise, even if the issues are outside of a given project. In short, we provide excellent customer service. We do not just care about a given project. We care about the City.

HBH staff have made themselves available to the client to listen to client needs regardless of the time. Strong communication remains central to our approach throughout the project's life. Even after a project is complete, we make a habit of calling to check up on the system's performance, and we stand behind our work.

Table 1 - A Sampling of Our Long-Term Client/Firm Relationships

Client	HBH Years of Service
City of Rockaway Beach, OR	16
City of Lincoln City, OR	15
City of Detroit, OR	14
Oceanside Water District	10
City of Junction City, OR	08
City of Oakland, OR	04
City of Idanha, OR	07

SCOPE OF SERVICES, SCHEDULE, AND COST PROPOSAL

Project Understanding

The City of Hood River owns and operates a wastewater collection system and treatment plant. The City is seeking to hire a consultant to complete an Inflow and Infiltration (I/I) study. The primary focus of this study will be the older clay pipes in the system as they are believed to be the largest contributors of I/I in the system.

Inflow and Infiltration (I/I) is caused by a variety of sources. Inflow sources consist of cross-connections such as catch basins or roof drains connected to the sanitary sewer, and infiltration can occur from cracked or broken pipes, leaking manholes, and leaking service laterals. I/I increases as a system ages.

There are several ways to identify I/I. These consist of reviewing flow rates, CCTV inspection, smoke testing, field inspections, nighttime monitoring, and flow monitoring. These methods work in conjunction with each other to determine areas of the City with higher I/I and prioritize those to find and quantify specific local sources.

This I/I study will utilize some or all of these methods as necessary to locate the sources of I/I in the system as needed. We will prioritize based on the minimum amount of cost to the City, to get the maximum results. Our team is budget conscious and will not recommend additional testing that will not result in additional information. This sets us apart from the large engineering firms that are mainly driven by corporate profits. For us, it is all about how to serve our customers best.



Project Scope

Task 1 – Data Collection Plan

Task 1-A – Background Data Review HBH will review existing data the City has on file, as well as information we have collected for previous Hood River wastewater projects. This will include the online GIS utility Map, existing video, past studies, reports and documents on the sewage collection system and related works, including refreshing our memories on the 2016 Wastewater Master Plan and Wastewater Facilities Plan we wrote. We will review updated pump station run times and meter data where available. We will also meet with City personnel to obtain knowledge of potential I/I locations. **Completion by January 29, 2021**

Task 1-B – Data Collection Plan In preparation for this proposal, HBH has started creating a preliminary data collection plan used for budgeting and scheduling in this proposal. This plan will be expanded upon when HBH takes the information gathered from Task 1-A and our previous work with the City to create a detailed data collection plan. This plan will outline the detailed locations, recommended budget, schedule, duration, and sequence of each of the data collection methods in Task 2 (field observations/inspections, smoke testing, and Closed-Circuit Television (CCTV) and flow monitoring). This plan will be submitted to the City for review and comment. It is very important we get this done as soon as possible in the year to make the most of the limited remaining rainy season in 2021. We will prioritize this project in our work schedule to make sure the City gets the best possible data. **Completion by February 12, 2021**

Deliverables: *Draft and Final Data Collection Plan*

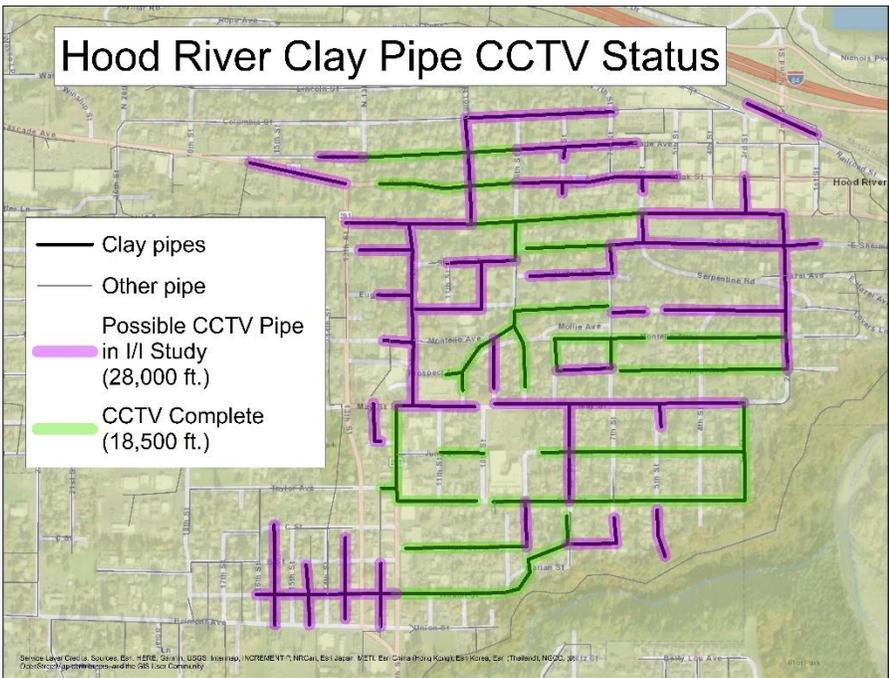
Task 2 – Data Collection

Task 2-A – Field Observations/Inspections This task will help determine the location of problem areas that should be explored further with CCTV. This work will include looking at historic logs/photos of adverse effect of high-flow events including surcharging in the collection system, overflows, and defective manholes. Nighttime monitoring will be completed in the early morning between the hours of 2 am and 4 am on days that are forecasted to have a large storm. During this time of the day people are the least likely to use water, so the majority of the water entering the system will be I/I. The analysis begins at the bottom of a sewer basin and continues up the sanitary sewer mains. Any significant changes in flows between consecutive manholes that do not combine multiple flows will likely signify

there is a problem in that pipe that should be explored further. HBH owns a portable velocity meter, which can be used to determine instantaneous flow to aid in the visual inspection, but the visual difference is usually quite noticeable.

Task 2-B – Smoke Testing Smoke testing consists of forcing smoke through a manhole into the collection system to see where the smoke vents. If smoke vents out of catch basins or roof drains, then there is a cross-connection. If it comes out of the sewer line or lateral anywhere besides the manhole, the pipe is allowing infiltration typically through a crack or an offset joint. Smoke testing needs to be accomplished during the dry months when it is not influenced by the water table. During testing HBH staff will work with City staff to use our smoking equipment to blow smoke into a manhole and look for smoke coming out of where it should not. Photos will be taken of these areas and they will be documented on a map.

Task 2-C – Closed Circuit Television (CCTV) Inspections This is the most fine-tuned step in the data collection. CCTV will be completed in areas found to have large amounts of I/I during field investigations and night-time monitoring. CCTV inspection should occur during moderately wet periods to best view I/I in problem areas without flooding pipes. The CCTV can capture footage of the I/I sources and see problems inside the pipe. After the video is recorded, it will be reviewed using the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) methods. NASSCO provides the North American Standard for pipeline defect assessment and identification. Deliverables will include a video, and a summary sheet for each section of pipe. The videography will be completed by our subconsultant, but HBH engineers will complete the analysis.



The figure to the left shows existing clay pipe. Green Pipes have already had CCTV completed (about 18,500 ft), and purple pipes are potential to be included in this project (about 28,000 ft). CCTV costs vary by location, whether or not the pipe needs to be cleaned before recording, and if there are access or slope issues. In the case that no pipes

need to be cleaned, and there are no other site issues, 100% of the rest of the clay pipes (about 28,000 ft.) that have not yet had CCTV can have it completed. However, in the more likely scenario about half of the remaining clay pipes that have not yet had CCTV will need to be cleaned prior to CCTV or will have an access issue. That equates to about 57% of remaining clay pipes (approximately 16,000 ft.) will have CCTV completed as part of this project. If all of the pipe needs to be cleaned, 40% of the remaining pipes (approximately 11,000 ft.) will have CCTV completed.

Task 2-D – Flow Monitoring (Optional) is performed using portable flow measuring instruments that record instantaneous flow readings in sanitary sewer manholes at key locations within the system. Flow monitoring is completed in the wet season as well as the dry season. Both of these flows are compared to each other and the daily rainfall, to estimate how much inflow, infiltration, and base flow are entering the system. Continuous data allows for estimating inflow and infiltration separately. The results from this step allow certain areas of the system with higher relative I/I to be evaluated in more depth. Lower priority can be given to areas with lower relative I/I.

The downside to flow monitoring is that it does not find any specific I/I locations. It is also very expensive as it is a very hands-on process that includes weekly visits to the site by the engineer. In addition, it will require City personnel with

confined space training to assist with the installation and removal of sensors in the sewer flow. The highest rainfall months in Hood River are typically December- February, so this project schedule does not lend itself very well to flow monitoring with the contract will be signed in late January. Without a major storm, the data collected is not always useful. Relatively speaking, CCTV has much more value for the money in this particular scenario.

We recommend forgoing all flow monitoring and using those funds for more CCTV. By omitting flow monitoring, the CCTV task can be expanded. CCTV is superior in this case, because you can see specific areas and recommend spot repairs to fix localized issues. Since the study area is so small, CCTV can capture a good representative area.

If flow monitoring is completed, approximately 16-36% of clay pipes that have not already been inspected with CCTV can be inspected. If no flow monitoring is completed, the amount of pipe that can be inspected is approximately 40-100% of pipes that have not already had CCTV analysis.

Deliverables: *Data records*

Completion dates for all Task 2 sub-tasks will be based on weather.

Task 3 – Data Analysis

Task 3-A – Compile Data After completing the various portions of Task 2, HBH will compile all of the flow monitoring data, field observation logs and photos from smoke testing and night-time monitoring, and CCTV video and documentation. This information will be compiled so it can be documented in the study. **Completion by July 23, 2021**

Task 3-B – Flow Analysis This task will involve the review of plant records and a statistical analysis of differences in flow between the wet and dry seasons at the wastewater treatment plant. Differences in patterns can be mathematically attributed to inflow or infiltration. Projected peak flows will be calculated for the peak hour, maximum day, and maximum month. This will also help quantify how much I/I and flows in general have changed since the Master Plan was last updated. **Completion by July 16, 2021**

Task 3-C – Identify I/I Locations This task consists of identifying the locations of I/I found through Task 2 investigations. **Completion by July 23, 2021**

Task 3-D – Identify Cross Connections Stormwater cross connections will be identified and mapped from smoke testing. **Completion by July 23, 2021**

Task 3-E – Prioritize Alternatives We will prioritize some alternative projects above others to get the most reduction in I/I at the lowest cost. For example, inflow repair projects such as stormwater cross connection with a large amount of flow will be prioritized high, where a potential infiltration location found through CCTV in the form of a small crack would be a low priority. These priorities will be summarized in the study and maps. **Completion by August 6, 2021**

Task 3-F – Capital Improvements A Capital Improvement Plan with a prioritized list of recommended I/I projects with associated cost estimates with the goal to reduce I/I in the most cost-effective manner. Project design will be in accordance with current City Public Works Design and Construction Standards. HBH will include a comparison to the current City of Hood River Water Master Plan and Wastewater Master Plan requirements that will confirm that pipes are sized appropriately. **Completion by August 20, 2021**

Deliverables: *Two hard copies and one electronic copy of data in format usable by and as requested by the City.*

Task 4 – I/I Study

Task 4-A – Draft I/I Study All results and mapping will be summarized in a study. A draft study will be created to summarize all of the previous fieldwork, mapping, and technical memorandums. It will also include recommended improvements from the alternatives analysis, and associated cost estimations and prioritization. These costs will be compared with the information provided on treating the flows at the WWTP to determine the best solution. It will include an estimation of the amount of I/I that will be reduced through these projects. **Completion by August 25, 2021**

Task 4-B – Data Submission to City This task will be providing all data, drawings plans, reports, exhibits, correspondence, memoranda, telephone logs, inspection reports, test results, photos, and other information to the City both in two hard copy sets and electronically on a format compatible with the City’s software including AutoCAD, and GIS shapefiles and in PDF maps for easy visualization as applicable and desired by the City.

Completion by August 25, 2021

Task 4-C – Final I/I Study Report After the City has reviewed the draft study and provided comments, HBH will address those comments and create the final report. **Completion by September 24, 2021**

Deliverables: Draft I/I Study Report, Final I/I Study

Task 5 - Project Management

Task 5-A – Kick-off Meeting This task will consist of organizing a kick-off meeting in order to define project goals, further clarify project and management approaches, identify roles and responsibilities, and confirm the scope of work and schedule. **Completion by January 27, 2021**

Deliverables: Meeting agenda and meeting minutes.

Task 5-B – Project Administration As the project manager, Andrey will work throughout the project to keep the project team on schedule and on budget. HBH will facilitate full coordination with City personnel. As a project manager for this project and an owner of the company, Andrey will be responsive to City emails and telephone discussions, in addition to any meetings we may have. We will be in contact with the City frequently enough to facilitate a timely City review of deliverables. We will work with all stakeholders in a responsible manner.

Completion by September 24, 2021

Deliverables: Correspondence, memoranda, telephone logs, and monthly itemized billing statements.

Project Cost

The cost for the scope as described in the proposal and the alternative scope will be approximately \$98,100 out of the \$100,000 budget. We propose this budget to maximize the possible data collection efforts and will be updated as part of the data collection plan task to make sure it meets the City’s expectations. The key here should be comparing scopes per value, not just selecting the cheapest price, as scope can be adjusted to meet City target budget in the draft data collection plan stage.

Task	Description	Amount
Data Collection Plan		
1-A	Background Data Review	\$2,600
1-B	Data Collection Plan	\$2,600
Data Collection		
2 - A	Field Observations/Inspections	\$4,765
2 - B	Smoke Testing	\$9,245
2 - C	Closed Circuit Television (CCTV) Inspections	\$31,360
2 - D	Flow Monitoring (optional)	-
Data Analysis		
3-A	Compile Data	\$9,649
3-B	Flow Analysis	\$1,066
3-C	Identify I&I Locations	\$5,491
3-D	Identify Cross Connections	\$1,493
3-E	Prioritize Alternatives	\$2,665
3-F	Capital Improvements	\$5,330
I&I Study		
4-A	Draft I&I Study	\$8,139
4-B	Data Submission to City	\$533
4-C	Final I&I Study Report	\$9,176
Project Management		
5-A	Kick-off Meeting	\$1,068
5-B	Project Administration	\$2,916

Project Schedule

HBH feels confident in meeting the City’s proposed schedule for this project, but we feel as if the first part of the project must be condensed to optimize weather conditions for the wet weather data collection. We have shown a conservative schedule here, but we intend to beat it to get wet weather data collection going as soon as possible to have the best chance of capturing a big storm in early March. Also, there is a time gap between CCTV and smoke testing due to typical weather in which most of the study will be written. Prioritization and the Capital Improvement Plan will occur after smoke testing, so that all data collection methods will be incorporated in those sections. We believe that finishing this project much earlier than the proposed schedule in the RFP is important because it allows for the City to address some of the Capital Improvements with design in fall 2021 and going to bid in early 2022. Going out to bid early in the year is important to keep cost down on construction projects.

Project Schedule																				
Task	Milestone	Completion Date	Week of																	
			01/25	02/01	02/08	02/15	02/22	03/01	03/08	03/15	03/22	03/29	04/05	04/12	04/19	04/26	05/03	05/10	05/17	05/24
	Design contract approval by City Council	1/25/21																		
Data Collection Plan																				
1-A	Background Data Review	1/29/21																		
1-B	Data Collection Plan	2/12/21																		
	City Review	2/19/21																		
Data Collection																				
2 - A	Field Observations/Inspections	TBD*																		
2 - C	Closed Circuit Television (CCTV) Inspections	TBD*																		
2 - D	Flow Monitoring (optional)	5/31/21																		
Data Analysis																				
3-A	Compile Data	7/23/21																		
Project Management																				
5-A	Kick-off Meeting	1/27/21																		
5-B	Project Administration	9/24/21																		

*This task is dependent on weather and will occur based on the forecast

Task	Milestone	Completion Date	Week of										
			07/05	07/12	07/19	07/26	08/02	08/09	08/16	08/23	08/30	09/06	09/13
Data Collection													
2 - B	Smoke Testing	TBD*											
Data Analysis													
3-A	Compile Data	7/23/21											
3-B	Flow Analysis	7/16/21											
3-C	Identify I&I Locations	7/23/21											
3-D	Identify Cross Connections	7/23/21											
3-E	Prioritize Alternatives	8/6/21											
3-F	Capital Improvements	8/20/21											
I&I Study													
4-A	Draft I&I Study	8/25/21											
4-B	Data Submission to City	8/25/21											
	City Review	9/17/21											
4-C	Final I&I Study Report	9/24/21											
Project Management													
5-B	Project Administration	9/24/21											

Supplemental Information

MICHAEL D. HENRY, PE
*Principal Engineer***Education**

Salem Vocational
Technical School, ASCE
Oregon State University,
General Engineering

Registration

Professional Engineer,
Oregon #10443PE
Professional
Environmental Engineer,
Oregon

Years of Experience

47

Experience with HBH

Founded in 1997

Mr. Henry is a principal and senior project manager at HBH and is responsible for pre-design, design, project coordination and construction services for engineering projects. He formed HBH in 1997. Mike has more than 45 years of professional civil engineering experience. Mr. Henry has extensive design and project management experience with wastewater systems as well as water, storm sewer, site improvements, and street improvements. Mike is an expert in water and wastewater system design, including treatment facilities, pump stations, gravity collection, and pressure sewers. He is also highly qualified in I/I investigation and abatement, and served as an I/I expert for CH2M Hill in Oregon for 7 years. He has managed many projects that received funding from various state and federal agencies and is experienced and familiar with virtually all funding programs available for municipalities and utilities. Mike has also completed many permit applications necessary for civil projects, including County and ODOT construction permits, building permits, Army Corps of Engineers Joint Permits for instream work, and numerous easements. Mr. Henry is also one of the originators of SDC methodology in the State of Oregon.

Mr. Henry currently serves as City Engineer for the City of Rockaway Beach, City of Idanha, and Junction City, as well as District Engineer for Oceanside Water District. He has previously served as City Engineer for the cities of Willamina, Dayton, Yamhill, Gervais, Carlton, Lafayette, Wheeler, Bay City, and Amity. In the capacity of city engineer/city planner, Mr. Henry provides civil engineering planning and design services, managerial assistance, and operator training and assistance. He has designed and managed projects for small districts to large cities such as Portland.

Representative Project ExperienceWater Engineering and Construction Services

- City of St. Helens – Elk Ridge Water Booster Pump Station and Force Main
- City of Rockaway Beach – Pacific View Booster Pump Station
- City of Junction City – Groundwater Treatment Plant, Phase 2
- Oceanside Water District – Distribution System Improvements - Ph 1 (4" and 6" waterlines, valves, hydrants, and service meters)
- Oceanside Water District - Transmission Waterline (8" and 10" waterline and small booster pump system)



Wastewater Treatment Plant
Amity, OR



McMillan Creek Reservoir
Rockaway Beach, OR



Wastewater Treatment Plant
Amity, OR

- Oceanside Water District – 220,000 Gallon Glass-Fused-Steel Cape Meares Reservoir
- Oceanside Water District – Water Treatment Plants & Intake Improvements (currently in design phase)
- City of Junction City - First Street Waterline Improvements
- City of Junction City - Groundwater Treatment Plant
- City of Rockaway Beach – Hwy 101 Waterline Improvements
- City of Amity – Design oversight - Water Treatment Plant, Pump Station and Intake, Piping
- City of Rockaway Beach – Anchor Street Waterline
- City of Rockaway Beach – Water Treatment Plant
- City of Rockaway Beach – 2.0 Million Gallon and 0.16 Million Gallon Glass-Fused-to-Steel Water Reservoirs
- City of Bay City – 0.5 Million Gallon Glass-Fused-to-Steel Water Reservoir
- City of Rockaway Beach – Jetty Creek Waterline Replacement
- Rockwood Water District – 18-inch Water Main Extension
- Country Club Water District – New Well Development and Other Improvements
- Mountainair Water District – Well and Piping Design
- Salmon Valley Water District – Well and Piping Design
- City of Idanha – Water Master Plan and Rate Study
- City of Bay City – Kilchis Regional Water District Water Master Plan
- City of Warrenton – 24" Raw Water Transmission (3 projects)
- Clackamas County – Lake Road Waterline Design – 1 miles of 18" and 24" waterline
- City of Toledo – Water Master Plan
- City of Willamina – Water Treatment Plant, 400,000-gallon Welded-Steel Reservoir, Pump Station, Intake Improvements
- City of Willamina – 1.0 Million Gallon Welded Steel Reservoir
- City of Yamhill – Water Master Plan
- City of Hubbard – Water Master Plan
- City of Yamhill – Water Transmission Line
- City of Lafayette – Water Reservoir & Piping
- City of Carlton – Water Master Plan
- City of Dayton – 1 MG Reservoir
- City of Tualatin – Norwood, Martinazzi, SW 65th Avenue Main Extensions
- City of Portland – Small Water Mains Design (50,000 lf and 10,000 lf)
- City of Portland – Rose Quarter Water Mains (22 to 24 blocks)

Wastewater Engineering and Construction Services

- City of Rockaway Beach – Sanitary Sewer Replacement
- City of Lincoln City – West Devils Lake Pump Station, Roads End South Pump Station

- ✦ *Expert in I/I analysis and abatement*
- ✦ *WWTP and lift station design*
- ✦ *Design for over 150 miles of sewer collection system*
- ✦ *Experience in trenchless rehabilitation methods*
- ✦ *On-site inspection and management for I/I abatement projects*



Wastewater Treatment Plant
SBR
Lafayette, OR



Willamina Wastewater
Treatment Plant
Willamina, OR

- City of Junction City – Wastewater Treatment Plant with Diffused Air
- City of Junction City – Sludge Management Plan and Disposal Plan
- City of Junction City – Wastewater Treatment Plant Predesign Report
- City of Junction City – North Common Force Main Phase 1
- City of Albany – Oak Creek Pump Station and 24" HDPE Pressure Main
- City of Lafayette – Wastewater Treatment Facility (SBR)
- City of Rockaway Beach – Wastewater Masterplan Review
- City of Yamhill – Sewerage Treatment Facility (lagoon system), River Outfall
- City of Yamhill – Collection Pump Stations
- City of Willamina – Phase I Sewer Improvements
- City of Willamina – Phase II Sewerage Treatment Facility (lagoons with defused air)
- City of Amity – Sewerage Treatment Facility (lagoons with defused air)
- City of Dayton – Lagoons, Pump Stations and Collection System
- City of Redmond – Wastewater Collection System, Lagoons (completely new system)
- City of Falls City – Wastewater Facilities Plan
- City of Hood River – Sewer Master Plan
- Grand Ronde Sanitary District – Wastewater Collection STEP System, pump stations, WWTP (completely new system)
- Clackamas County Service District No. 1 – Sunnyside and Mt. Scott Interceptor, area wide collection system
- City of West Linn – Rosemont Sewers
- City of Sheridan – West Main Sewers
- City of Sheridan – Infiltration/Inflow Certification
- City of Sheridan – Northside Rehabilitation
- City of Portland – BES - Tryon Creek Sewer Infiltration/Inflow Abatement
- City of Portland – Stevens Slough Sanitary Sewer Reconstruction
- Grand Ronde Sanitary District – Sewerage Lagoon Treatment Facility
- City of Yamhill – Updated Sewerage Facilities Plan
- City of Carlton – West Main Sewer Replacement
- City of Adair Village – Sewer Treatment Plant Operation and Maintenance Manual
- City of Sheridan – Jefferson St. Sewer
- City of Cannon Beach – I/I Investigation and Sewer System Evaluation Study
- Columbia River Correctional Facility (Portland) – 6 MGD Sewer Pump Station
- Boeing (Portland) – Sewer Study/Design
- City of Willamina – Infiltration/Inflow Abatement
- City of Amity – Infiltration/Inflow Abatement
- City of Astoria – Infiltration/Inflow Analysis and Abatement Program

Civil Manager for Major

Projects:

- ✦ *Rose Garden Arena*
- ✦ *OMSI*
- ✦ *OHSU*
- ✦ *Chinook Winds Casino*
- ✦ *Boeing*
- ✦ *SeaTac Airport Parking*
- ✦ *Capitol Mall*
- ✦ *Columbia River Correctional Facility*

Stormwater Engineering and Construction Services

- City of Willamina – Storm Drainage Master Plan
- City of Yamhill – Comprehensive Storm Sewer Study
- City of Hubbard – Storm Drainage Master Plan
- City of Sheridan – Jefferson St. Storm Sewer
- City of Hubbard – “G” Street & “D” Storm Sewer
- Boeing (Portland) – Stormwater Design
- Oregon Arena Project – Stormwater Study and Design
- City of Willamina – Hill Drive/Pioneer Drive Basin Storm Drainage Study
- City of Portland – SE Industrial Basin and Passive Stormwater Study
- City of Portland – Stevens Slough Storm Sewer Reconstruction
- Hood River Urban Renewal Agency – Phase II Infrastructure Study
- City of Tigard – Cascade Blvd. Drainage Study
- Oregon Health Sciences University (OHSU) – Campus Drainage Analysis

Transportation Engineering and Construction Services

- City of Amity – First Street and Sherman Street Improvements
- City of Rockaway Beach – Anchor Street Improvements
- City of Yamhill – Comprehensive Street Study
- City of Willamina - Willamina Drive Street Reconstruction
- City of Yamhill – Second Street LID
- City of Carlton – Kutch Street Design and West Main Street Improvements
- City of St. Helens – 9th Street LID
- Hood River Urban Renewal Agency – Cascade Avenue Improvements
- City of Hood River – Lincoln Avenue LID
- City of Tigard – SW Hall Boulevard, Lincoln, and Locust Street LID
- City of Tigard – SW 68th Parkway Overlay
- City of Tigard – Main Street Transportation Study
- City of Tualatin – SW 65th LID
- City of Portland – NE Sandy Blvd. Improvements
- City of Portland – SE Water Avenue Extension, SE Market, SE Clay Improvements, and NE Sunderland Improvements
- City of Portland – 20 Blocks of Street Improvements for the Oregon Arena Project
- City of Portland – Street Improvements in Association with Private Developments (11 blocks)
- City of Dayton – Citywide LID for Overlays



Rose Quarter
Portland, OR

Other Engineering

- Authored several ordinances, comprehensive plan updates, zone codes, development standard and provided public participation process for various municipalities throughout the State of Oregon.

- System Development Charge (SDC) Ordinances, sewer, water, and streets for the cities of Rockaway Beach, Bay City, Hubbard, Carlton, Yamhill, Willamina and Adair Village.
- Oregon Arena Project (Rose Garden Arena) – Project Manager for Public Improvements
- Oregon Health Sciences University – Various Projects (Portland)
- Oregon Museum of Science and Industry (Portland)
- Capitol Mall Improvements (Salem)
- Chinook Winds Casino (Lincoln City)
- Willamette University Millrace Relocation (Salem)
- Columbia River Correctional Facility (Portland)
- City of Dayton – Yamhill River Utility Crossing and Footbridge

Funding Applications

- City of Willamina – Reservoir (FmHA), Water Intake (FEMA, RD), WTP (RD, W/W, CDBG), WWTP (W/W, CDBG, SRLF)
- City of Dayton – Sewer Treatment Plant (DEQ/EPA), Water Reservoir (EDA)
- City of Sheridan – West Main Sewer (DEQ/EPA), HUD Block Grant, EDA), Northside Sewer (DEQ/EPA)
- City of Yamhill – Sewer Treatment Plant (FmHA, Water/Wastewater, CDBG), Transmission Main (FmHA)
- Transportation System Plan (ODOT), Comprehensive Plan (DLCD)
- City of Carlton – Water Master Plan (CDBG), Transportation System Plan (ODOT), Comprehensive Plan (DLCD)
- City of Sublimity – Sewer System (FmHA)
- City of Redwood – Sewer System (FmHA, DEQ/EPA)
- Grand Ronde Sanitary District – Sewer System (DEQ/EPA, FmHA, EDA)
- City of Amity – Water System Improvements (W/W, CDBG, SRLF)
- ODOT SCA Grants – Willamina, Yamhill, Carlton, Amity, Hubbard, and Rockaway Beach

ANDREY R. CHERNISHOV, PE, CWRE

Principal Engineer

Education

Oregon State University,
BS Civil Engineering
2005

Marylhurst University,
MBA 2016

Registration

Professional Engineer,
Oregon #76347PE
Washington#55861
California #C75178

Certification

Certified Water Rights
Examiner, Oregon
#76347CWRE

ODOT General
Construction &
Environmental/Erosion
Control Inspector,
#48809

Years of Experience

14

Experience with HBH

Since 2014

Organizations

City of Canby Planning
Commission Member

Mr. Chernishov is a professional engineer with 14 years of post-graduate experience in various phases of civil engineering projects. Mr. Chernishov's specific experience includes the design of public and private streets including widening, overlays, reconstruction, new construction, realignment, and future alignments. His water experience includes waterline replacement, relocation, new construction, upsizing, construction staging, pressure reducing stations, water reservoirs. His stormwater experience includes hydrologic modeling, water quality/quantity pond and swale design, culvert design, hydraulic capacity modeling, water and stormwater master planning. His site design experience includes commercial and residential development, waste water treatment and pump stations, sewer line replacement, grading and erosion control, construction management and inspection.

Representative Project Experience

Water System Engineering

- Oregon Health Authority – Drinking Water Services – 2015 Drinking Water Infrastructure Needs Survey and Assessment (DWINSA)
- City of Junction City - 11th & Elm St Well Improvements
- City of Rockaway Beach - Hwy 101 Waterline Improvements
- City of Junction City - 1st Ave Waterline Improvements
- Willamina School District - Fire Pump Station Design
- City of Gates – CIP Water System Improvements (Pipeline, Reservoir, Treatment Plant, Booster Station)
- Oregon Drinking Water Program Circuit Rider (Technical Assistance)
- City of Gates - Water Master Plan
- City of Wilsonville - Water Master Plan
- City of Wilsonville - Water Management and Conservation Plan
- City of Willamina - Water Master Plan
- City of Amity - Water Master Plan
- City of Silverton - Water Master Plan
- Emerald Christian Academy - Corrosion Control Plan and Design
- City of Stayton - Water Right Extensions
- Wood Village - Water Right Transfers & Modifications, Waterline Ext
- Various Jurisdictions – Over 17 miles of new waterline design

Wastewater Engineering

- City of Lincoln City - Roads End South Pump Station Upgrade
- City of Lincoln City - Jetty Ave Trunk Line Replacement
- City of Junction City - WWTP Lagoon Air Diffusion System
- City of Junction City - 17th Ave Pipe Bursting
- City of Lake Oswego - Bella Terra Pump Station & CIP Pipeline Ext
- City of Amity - WWTP Headworks Pump Station
- City of Lincoln City – West Devils Lake Pump Station Upgrade
- City of Stayton - Wastewater Treatment Plant Improvements
- City of Newberg - Infiltration and Inflow (I&I) Study

- City of Ashland - Infiltration and Inflow (I&I) Study
- City of Stayton - Infiltration and Inflow (I&I) Study
- City of McMinnville - High School Basin I&I Reduction Improvements
- City of Wood Village - Sanitary Sewer Line Extension
- City of Sheridan - Wastewater Facilities Planning Study
- City of Ashland - Wastewater Facilities Planning Study
- Various Jurisdictions – Over 15 miles of new sewer line design

Transportation Engineering

- City of Lincoln City - Coast Ave Roadway Improvements
- City of Detroit - Hwy 22 Rectangular Rapid Flashing Beacon (RRFB) Crossing
- City of Lincoln City - Hwy 101 Sidewalk & ADA Improvements
- City of Willamina - HWY 18 Sidewalk & ADA Improvements
- City of Detroit - Clester Road Overlay
- City of Lake Oswego - Capitol Roadway Improvements
- Otis - Boulder Creek Retreat Special Road District Improvements
- Various Jurisdictions – Over 8 miles of new roadway design

Stormwater Engineering

- Tillamook County - Southern Flow Corridor Salt Marsh Restoration
- City of Lincoln City - 52nd Dr & Keel Ave Stormwater Improvements
- City Grants Pass - Stormwater Master Plan
- City of Silverton - Stormwater Master Plan
- City of Wood Village - Stormwater Master Plan
- City of Stayton - Stormwater Quality Sampling Analysis
- City of Stayton - Stormwater Modeling Updates
- Various Jurisdictions – Modeling and design of stormwater detention and water quality facilities for many private and commercial development projects including ponds, swales, infiltration basins, and rain gardens.
- Various Jurisdictions – Storm water conveyance systems including piping, culverts, ditches, and tide gates.
- Various Modeling techniques and software (XPSWMM & HydroCAD) including, rational method, SBUH, and SCS.

Site Design

- McMinnville - World Class Technology Site Expansion
- McMinnville – Evans St Apartment Improvements
- McMinnville – TerraCalc Office Development
- Newberg - First American Title Site Improvements
- McMinnville - Marjorie House Senior Assisted Living Facility
- Portland - Happy Valley Senior Village
- Willamina School District - Ballfield Drainage Design
- Lake Oswego - Bella Terra Subdivision
- Hillsboro - SolarWorld Industries America Site Expansion
- Beaverton - Tualatin Valley Water District Dewatering Facility
- Sherwood - St. Francis School Expansion
- Tualatin - Tualatin Valley Fire & Rescue Fire Stations
- Happy Valley - Sunnyside Heights Commercial Site Improvements
- Aloha - Intel Aloha Campus Fab 4 Building Demolition
- Wilsonville - Wilsonville Medical Plaza
- Salem - Willamette University Track & Field Improvements
- Brooks - Bayer CropScience Site Expansion

ROBERT M. HENRY, PE
Principal Engineer

Education

Oregon State University,
BSCE

Registration

Professional Engineer,
Oregon #19191PE

Years of Experience

25

Experience with HBH

Founded in 1997

Mr. Henry is a Principal of HBH and has over 25 years of experience in the municipal engineering field. Robert is the City Engineer for the City of Detroit and Assistant District Engineer for Oceanside Water District and District Engineer for Dumbeck Lane Domestic Water Supply District. He is also the Assistant City Engineer for Junction City, Rockaway Beach and Idanha. Robert is an expert in the design and planning of water and sewer treatment systems. He has also designed several street and pedestrian improvements, including projects within ODOT Right-of-Way. Robert was also the primary civil engineer for 7 school renovation projects.

Robert also overseen the Oregon Health Authority Drinking Water Circuit Rider Program for 11 years. He was called upon for his expertise in this program throughout the state. His oversight has led to the phenomenal success of the Circuit Rider program and recognition by the State and many communities.

Robert has extensive experience and familiarity with regulatory agencies including DEQ, Oregon Health Authority, Fish and Wildlife, Department of State Lands, Corps of Engineers, and others.

Representative Project Experience

Water Engineering

- Oregon Drinking Water Program Circuit Rider (Technical Assistance) – Lead Engineer/Project Manager
- Oregon Department of Human Services – Drinking Water Infrastructure Needs Surveys and Analysis – Lead Engineer/Project Manager
- Oceanside Water District – Water Master Plan
- City of Warrenton – Raw Water Reservoir
- Opal Creek – Slow Sand Filter Water Treatment Plant
- Tilikum Retreat Center – Slow Sand Filter Water Treatment Plant
- City of Astoria – Slow Sand Filter Resanding Technical Assistance
- City of Manzanita – Water Corrosion Control Analysis/CO₂ Stripper
- Jewell School District – Slow Sand Filter Water Treatment Plant
- Tri City JSWA ARRA Water Treatment Improvements
- Columbia River PUD Water Treatment Improvements – Nitrate Removal
- Dumbeck Lane Domestic Water Supply District –Waterline Replacement
- City of Depoe Bay – Water Master Plan, Rate Study, and SDCs

- ✦ *Authored over a dozen water studies*
- ✦ *Design of distribution pipes, booster stations, and intakes*
- ✦ *Design for treatment facilities in Timber, Rockaway Beach, Jewell, Opal Creek, Willamina, Amity and Fishhawk Lake*



Water Treatment Plant
Timber, OR



Wastewater Treatment Plant
Willamina, OR

- Groundwater Corrosion Control Systems – Molalla School District and Eddyville School
- Groundwater Chlorination Systems – Fox Hollow Estates and The Dalles Country Club
- Kerby Water District – Water System Improvements
- Timber Water Association – Membrane Water Treatment Plant
- Watseco-Barview Water – District Engineering & Water Master Plan
- Stone Ridge Estates – Water Main
- City of Detroit – Water Master Plan & Water System Improvements
- Buell-Red Prairie – Water Treatment Plant Feasibility Study
- City of Rockaway Beach – Water Master Plan & Membrane Water Treatment Plant
- City of Amity – Upflow Clarifier Treatment Plant
- Fishhawk Lake – Multi-media Direct Filtration Water Treatment Plant
- City of Willamina – Upflow Clarifier Water Treatment Plant
- City of Amity – Water Intake and Raw Water Pump Station
- City of Willamina – Water Intake Improvements
- City of Sheridan – Monroe Street Water Main Replacement
- City of Willamina – Churchman Street Water Main
- City of Willamina – Reservoir Inspection and Troubleshooting
- Country Club Water District – Well and Booster Pump Improvements
- Hermiston School District – Irrigation Well Connection Design
- City of North Plains – Water System Development Charges
- City of Donald – Water System Capital Improvement Plan and System Development Charges
- City of Vernonia – Water Master Plan
- Port of Tillamook Bay – Water Master Plan
- City of Oakland – Water Master Plan
- City of Hood River – Springs Development Study
- Fishhawk Lake – Water Treatment Study
- City of Amity – Water Master Plan Modifications and Predesign Report
- City of Willamina – Hill Drive Booster Pump Station
- City of Gaston – Water Booster Pump Station
- City of Newberg – Summit at Oak Knolls Water Pump Station
- Oregon Office of Emergency Management – Vulnerability Assessment and Emergency Response Planning

Wastewater Engineering

- City of Detroit – Wastewater Feasibility Study
- City of Hood River – Wastewater Facilities Plan
- City of Lafayette – Wastewater Treatment Plant (SBR)
- City of Willamina – Phase I Sewer Improvements
- City of Willamina – Phase II Treatment Expansion and I/I Improvements (Aerated Lagoon)

⊕ Authored 10
 wastewater studies
 ⊕ Design for 13 pump
 stations
 ⊕ Design for
 treatment facilities
 in Sweet Home,
 Joseph, Willamina,
 Neskowin, Biggs,
 Amity, Lafayette,
 and Oakland



Hwy 101 Ped. Improvements
Depoe Bay, OR



Hwy 101 and 4th Ave
Garibaldi, OR

- Oakland Depot RV Park – SBR Treatment Plant and Pump Stations (x3)
- NDPE Permit Negotiations – Junction City, Lafayette, Willamina, Biggs, and Amity
- City of Amity – Wastewater Treatment Expansion (Aerated Lagoons)
- City of Joseph – Wastewater Treatment Expansion (Aerated Lagoons)
- City of Joseph – Effluent Reuse Pump Station (2000 gpm)
- City of Sweet Home – Wastewater Treatment Plant Modifications
- Neskowin Regional Sanitary Authority – Wastewater System Design and Inspection (SBR and Septic Tank Effluent system)
- City of Sweet Home – Septage Receiving Station
- Biggs Service District – Wastewater Collection and Treatment Design (Extended Air)
- City of Dundee – Effluent Reuse System
- City of Sheridan – Monroe Street I/I Reduction Improvements
- City of Sheridan – Sewer Outfall
- City of Monmouth – Sewer Master Plan
- Ananda-Laurelwood Academy – Wastewater Treatment Plant Evaluation/Improvements
- Ananda-Laurelwood Academy – Smoke Testing I/I Investigation
- City of Metolius – Wastewater Treatment Engineering Study
- City of Depoe Bay – Wastewater Master Plan and SDCs
- City of Oakland – Wastewater Engineering Study
- Port of Tillamook Bay – Wastewater Facilities Plan
- Tri City Sanitary District – Wastewater Engineering Study
- City of Garibaldi – Inflow and Infiltration Study
- City of Willamina – Inflow and Infiltration Reduction Study
- City of Lebanon – West Side Interceptor, I/I Investigation/Pre-design
- City of Donald – Wastewater CIP and SDCs
- City of Willamina – Main and South Pump Stations
- Portland-Dayton RV Park – Sewer Pump Station, Dayton, OR
- City of Dayton – Palmer Creek Pump Station

Transportation Engineering

- City of Garibaldi – Hwy 101 and 4th Avenue Improvements
- City of Detroit – Clester Road Improvements
- City of Depoe Bay – Hwy 101 Downtown Pedestrian Improvements
- City of Depoe Bay – Southpoint Street
- City of Hubbard – First Street Improvements
- City of North Plains – Hillcrest Avenue Improvements
- Beaverton-Hillsdale Highway – Storm and Sidewalk Improvements
- City of Hermiston – Ninth and Joseph Street Improvements
- City of Willamina – Fir Street Improvements
- City of Sheridan – Monroe Street Reconstruction and Overlay
- City of Carlton – Kutch Street Reconstruction
- City of Dayton – 7th Street Improvement

- City of Dayton – Joel Palmer Way Improvements
- City of Tigard – SW Lincoln Street, SW 90th Ave, SW 82nd Ave Widening

Stormwater Engineering

- Clackamas County – Part 2 NPDES Permit Application
- City of Detroit – Stormwater Master Plan
- Estacada Schools – North Ballfields Stream Relocation
- City of Willamina – Stormwater Master Plan
- Port of Garibaldi – Stormwater Drainage Study
- City of Portland – Police Horse Paddock Drainage
- City of Willamina – Pioneer Street Storm Drainage Study
- Oregon Department of Environmental Quality – Wastewater Fate Study
- Portland Christian Center – Stormwater Quality and Detention Facilities
- Multnomah County – McNutt Street Stormwater Quality and Detention
- City of Hermiston – Subsurface Drainage Facilities



CF Tigard Elementary
Tigard, OR



Desert View Middle School
Hermiston, OR



Metzger Elementary School
Tigard, OR

Other Engineering

- Hermiston High School Remodel, Hermiston, OR
- Desert View Middle School, Hermiston, OR
- Portland Christian Center, Portland, OR
- Estacada Grade School, Estacada, OR
- Eagle Creek Grade School, Estacada, OR
- River Mill Elementary School, Estacada, OR
- Palmer Creek Subdivision, Dayton, OR
- Metzger Elementary School, Tigard, OR
- CF Tigard Elementary School, Tigard, OR
- Landmark Apartments, Beaverton, OR
- Dayton RV Park, Dayton, OR
- Sutherlin RV Park, Sutherlin, OR
- Hood River/I-84 Bridge Utilities Relocation
- Project Manager for Oregon Health Division Drinking Water Program Circuit Rider Technical Assistance Program
- Water Treatment Plants for Amity, Fishhawk Lake, Rockaway Beach, Jewell SD, Columbia PUD, Timber and Willamina
- Sanitary treatment, pump station and pipeline design

Natalie Jennings, PE CWRE
Project Engineer

Education

Purdue University,
BS Civil Engineering

Oregon State University,
Masters of Engineering

Registration

Professional Engineer,
Oregon #89834PE

Certification

Certified Water Rights
Examiner
Oregon # 89834CWRE

Years of Experience

9

Experience with HBH

Since 2015

Miss Jennings has a large amount of experience serving the wastewater needs of communities throughout Oregon from planning, to analysis, design, and construction observation. Some main highlights of her work include inflow and infiltration studies, smoke testing, CCTV review, nighttime monitoring, flow metering collection and data analysis. She also has plenty of experience working on water, stormwater, and transportation projects. The following list provides more details on her wastewater skills and experience.

Representative Project Experience

Wastewater Engineering

- City of Newberg- I&I study
- City of Yamhill- Smoke testing Wastewater Facilities Planning Study
- City of Dayton- Smoke Testing
- Portland Bureau of Environmental Services-CCTV NASSCO pipe review
- City of Sheridan- Wastewater Facilities Planning Study
- Lane Community College- Wastewater Facilities Planning Study
- City of Ashland- I&I study
- City of Stayton- Biosolids management
- City of Lake Oswego- Marylhurst Pump Station
- City of Wood Village- Sewer main

Water System Engineering

- Willamina (Water Master Plan, Water Management and Conservation Plan)
- Aumsville (Water Master Plan, Water Management and Conservation Plan)
- Wood Village (Water Master Plan, Wood Village Blvd. Water and Sewer Improvements)
- Gates (Water Master Plan, Gates Water System Improvements including redesigning the majority of the system)
- Amity (Water Master Plan, Water Management and Conservation Plan)
- Wilsonville (Water Management and Conservation Plan)
- Beverly Beach State Park (Water Treatment Plant)
- State of Oregon (2015 Drinking Water Infrastructure Needs Survey and Assessment)

Stormwater Engineering

- City of Grants Pass- Stormwater Master plan
- City of Wood Village- Stormwater Master plan
- City of Silverton- Stormwater Master plan
- City of Stayton, OR- Industrial park Stormwater modeling
- City of Stayton, OR- Pioneer meadows Subdivision Stormwater model

- ⊕ *I&I Studies*
- ⊕ *Wastewater Facilities Plans*
- ⊕ *Smoke Testing*
- ⊕ *Flow Monitoring*
- ⊕ *CCTV*
- ⊕ *GIS Integration*



Experience

Responsibility

Trust

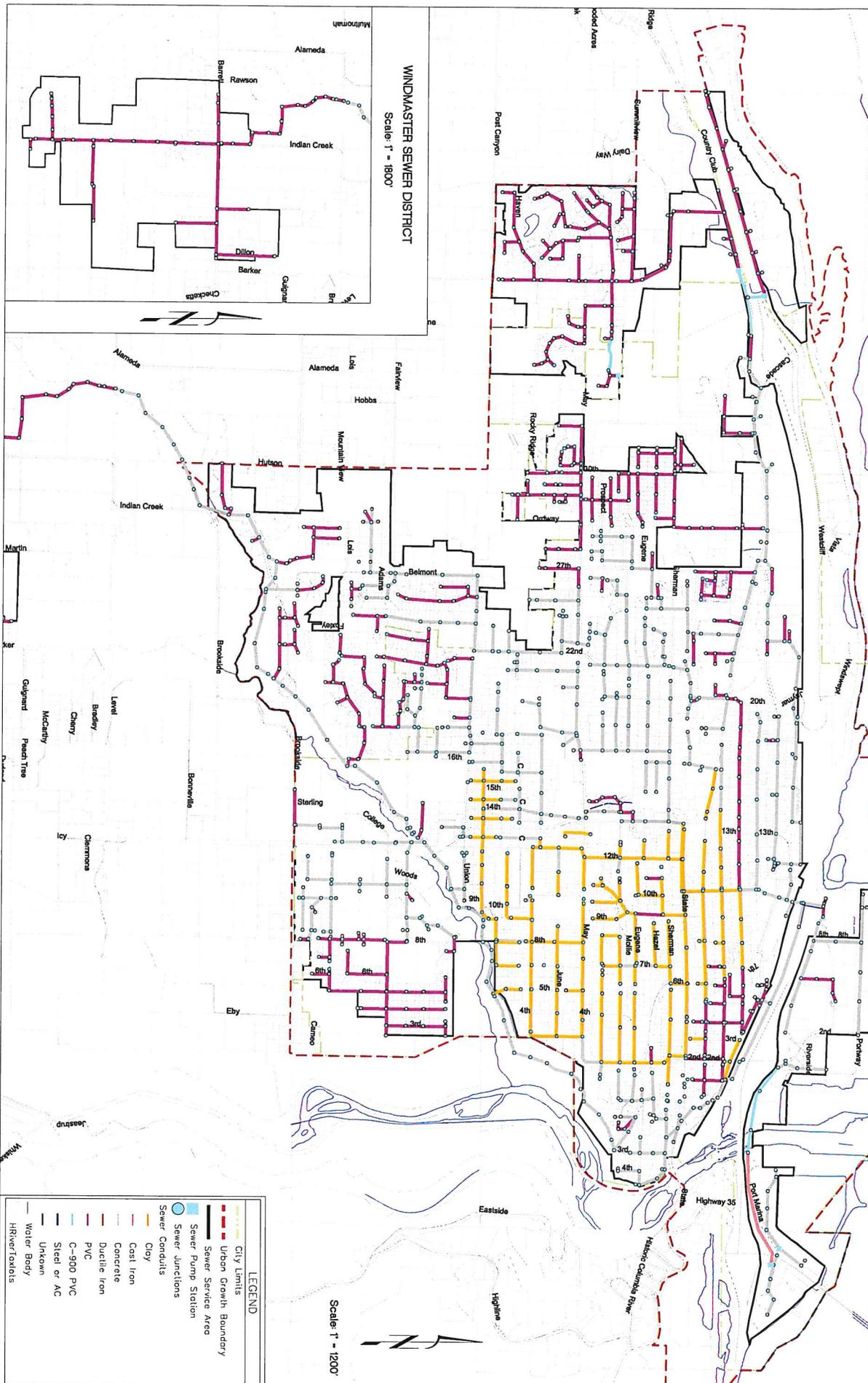


FIG. 4-2
DRAWN BY: BTM
DATE: February 28, 2015

SANITARY SEWER PIPE BY MATERIAL

**CITY OF HOOD RIVER
SEWER FACILITIES PLAN**

H B H
Consulting
Engineers

Title	Description	Membership/Contact	Meeting Times	Legislative Ref.
Shade Tree Committee	<p>Members are appointed for four year terms. Vacancies are filled by an appointment made by the Council for the remainder of the unexpired term. The Shade Tree Committee assists with maintaining an updated tree inventory, developing criteria to determine “Heritage Trees” within the City, coordinate programs to celebrate Arbor Day, review planting plan for street trees, making recommendations regarding landscaping plans, preparing a street tree plan, and investigating grants to support the committee’s work.</p> <p>The current tree committee membership was formed organically after several years of dormancy. The current membership has not been formally appointed</p>	<p>Dan Ball Kathy Jubitz Jacquie Brown Barone Tyler Roth Rick Peargin - City Staff Haley Ellett - City Staff Councilor Tim Counihan Tina Lassen - Planning Commissioner</p>	<p>4th Monday of each month 10:00 a.m.</p>	<p>Shade Tree Committee was established through Ordinance 1976 (2009). HRMC 13.12</p>
Chamber of Commerce/Visitor Advisory Committee	<p>Provides oversight to the Chamber of Commerce relating to the expenditure of Transient Room Tax for tourism promotion activities</p>	<p>Councilor Megan Saunders Councilor Jessica Metta Councilor Erick Haynie (sub)</p>	<p>3rd Wednesday of each month 9 a.m.</p>	<p>Relates to HRMC 5.09 that requires 25% of Transient Room Tax revenue to be spent for tourism promotion & 2009 Agreement between the Chamber of Commerce and City of Hood River designating the Chamber of Commerce as the entity that will administer the City's tourism promotion activities under the oversight of the Visitors Council</p>

<p>Planning Commission</p>	<p>The Planning Commission consists of seven members appointed by the City Council. Commissioners serve a term of four years. The Planning Commission makes recommendations concerning the layout or modifications of streets, establishment of setback lines, betterment of housing or sanitation conditions, establishment of zones and districts, and generally plans for the regulation of future growth, development, and beautification of the City. The Planning Commission also serves a quasi-judicial</p>	<p>Chair Mark Frost Bill Irving Tina Lassen Vice Chair Sue Powers Amy Schlappi Megan Ramey</p>	<p>1st and 3rd Monday of each month 5:30 p.m.</p>	<p>HRMC 2.36 & 17.09</p>
<p>Budget Committee</p>	<p>The Budget Committee is the City's designated fiscal planning advisory group. It is composed of the City Council and an equal number of electors appointed by the City Council. Although appointed by the City Council, all members of the budget committee have equal authority. Oregon Local Budget Law requires that a Budget Committee review and formally approve the Proposed Budget. The budget document and resolution creates the legal authority for the City to Levy tax and spend public funds in the upcoming fiscal year. The Budget Committee receives the budget message from the City Budget Officer, holds public hearings, and adjusts the Proposed Budget as necessary via majority vote. The Budget Committee's Approved Budget is then considered by the City Council for adoption.</p>	<p>Mayor Kate McBride Councilor Mark Zanmiller Councilor Megan Saunders Councilor Tim Counihan Councilor Jessica Metta Councilor Erick Haynie Councilor Gladys Rivera ***Electors Term Expirations _____ Ross Brown June 30, 2021 David Bick June 30, 2020 Grant Polson June 30, 2021 Becky Brun June 30, 2020 Tim Decker June 30, 2020 Gary Reed June 30, 2022 Rudy Kellner June 30, 2022</p>	<p>Typically meets Wednesdays in the month of April</p>	<p>ORS 294</p>

Landmarks Review Board	<p>The Landmarks Review Board is composed of seven members appointed by the City Council. Four members must live within the City of Hood River or the Urban Growth Boundary and all members must reside within Hood River County. Board terms are three years. The Landmarks Review Board maintains the Hood River Cultural Resource Inventory, recommends the designation of historic landmarks or districts to the City Council, and protects historic landmarks through review and approval of alterations, demolition or new construction that impacts landmark structures or districts. The Board also generally provides a forum for public participation in issues related to historic preservation and education on historic resources.</p>	<p>Bill Pattison – Historian April 2022 Arthur Babitz – Engineer April 2022 Cathy Orfall – Interior Designer April 2022 VACANCY April 2023 Jeff Dellis – Architect April 2023 Cindy Walbridge – Retired Planning Director April 2021 Scott Sorenson – Building Contractor April 2021</p>	<p>4th Thursdya of each month 3:30 p.m. when needed</p>	<p>HRMC 17.14</p>
Energy Council	<p>Hood River County led group that helped issue the Hood River County Energy Plan and is now working in operationalizing it.</p>	<p>Marla Harvey Mayor Kate McBride Councilor Tim Counihan Councilor Megan Saunders (sub) Butch Miller David Mariwether Les Perkins Annick Charlier Alexia Kelly Cathy Higgins Eric Strid Julia Garcia-Ramirez Matt King Peter Kernan</p>	<p>Meeting Time?</p>	
ODOT Region 1 ACT	<p>Community representation group for ODOT for Region 1 operations and investment</p>	<p>Councilor Erick Haynie Councilor Tim Counihan (sub)</p>		

Mid-Columbia Economic Development District	The City has a ex officio member of MCEDD's board	Councilor Mark Zanmiller		
Urban Renewal Advisory Committee	Citizen representatives that review and make recommendations on Urban Renewal projects and expenditures	Jack Trumbull - Chair 12/31/2024 Pat McAllister 12/31/2022 Amanda Goeke 12/31/2024 Joshua Chandler 12/31/2022 Abby Capovilla 12/31/2022 Clint Harris 12/31/2021 Tina Lassen - Planning Commissioner October 2022	3rd Thursday of each month 5:30 p.m.	
Equity Advisory Committee (formerly Latino Advisory Committee)		Mayor Kate McBride Councilor Gladys Rivera Laura Garcia Rangel Gaby Bustos Munoz * All other Council members interested	Quarterly - TBD	
Bridge Replacement Working Group		Mayor Kate McBride Councilor Jessica Metta		
COUNCIL SUGGESTIONS		Membership/Contact		
Aging in the Gorge Alliance				

Street Project Group		Mayor Kate McBride Councilor Mark Zanmiller Councilor Jessica Metta Cindy Walbridge Megan Ramey Tina Lassen Jonathan Graca Peter Cornelison Heather Staten Kathy Nick Kraemer T. Gautier		
Chamber				
New Heights Group		Dani Correa		
Downtown Business		Chamber		
Thrive		Heather Staten		
Livable		Tina Lassen		
Indivisible		Bonnie New		
Community Outreach		Amanda Goeke		
Rotary				
Elks				